Professional Doctorate in Health Psychology
Thesis Portfolio

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Acknowledgements

Authors Declaration

I, Nicola Whippy declare that while registered as a student for the University's research degree, I have not been a registered student or enrolled student for another award of a UK university or other academic or professional institution. I declare that no material contained in the thesis has been used in any other submission for an academic award and I declare that my research complies with UK legislation governing research.

Preface

The Journey of Becoming a Health Psychologist

This portfolio and the competency folders contain two years of reflective practice logs and demonstrate evidence of how I have met the required competencies for the Professional Doctorate in Health Psychology. In the form of four case studies, one systematic review and a research thesis conducted over a period of two years, it shows my range of knowledge and skills gained within Health Psychology. Both the portfolio and the competency folders consist of a range of practical experiences of how I have put health psychology theories and constructs into practice within NHS, charity and corporate settings.

The skills and experiences I have gained in this portfolio have been mainly placed within public health but also working alongside the NHS, which Health Psychology heavily contributes to. This portfolio demonstrates my development as a reflective practitioner through a variety of experiences and roles needed to meet each competency. My main role throughout this course has been as a Specialist Stop Smoking Advisor and Smoking in Pregnancy Lead.

A large part of this portfolio and my development as a Health Psychologists is Section C3, (page 109), the research competency. When starting this course, it took me a long time to decide on an original topic of research for the thesis, (Section C3, page 109) and I feel that at the beginning, when writing my ethics proposal, my thought process was much more basic. My research thesis examined the use of electronic cigarettes within smoking cessation and the effects this can have on individuals changes in weight. It explored this by comparing different smoking cessation aids, (NRT, Champix and E-cigarettes), gender, ethnicity (Asian or Non-Asian), eating behaviours and activity levels to compare different variables in their strength in predicting weight changes during smoking cessation. Initially, my thought process felt that e-cigarettes could be a stronger variable at preventing weight changes compared to other smoking cessation aids, despite other contributing factors. However, throughout the duration of the course, I feel that my thought process developed as a Health Psychologist and I wanted to consider the results further. Initially, the results from an ANOVA showed that people using e-cigarettes did gain the least amount of weight over a 6-month period. However, after further analysis using the other variables available, I found that the strongest variables at predicting weight changes was gender and eating behaviours. I feel that this was a big change in my way of thinking and allowed me to find more significant results. My overall conclusion was that women are more likely to gain weight during smoking cessation due to them being more sensitive to changes in eating based on emotion and stress. This means that I feel more confident in this being a unique and original

contribution of research in Health Psychology and I am proud of what I have achieved and developed within this competency.

Following this, the systematic review, section C3.1, (page 212), was one of the most challenging competencies I faced during the two years. This is something that was very new for me and I was initially concerned about my ability to complete this and it was challenging for me to choose a relevant topic. However, after hours of researching and some supervision support, I developed the review to choosing a unique topic and varied area of research for my portfolio. I decided to research and compare the varied perceptions of individuals on people with epilepsy driving. This included the perceptions of people with epilepsy themselves, health professionals and the public. I felt that each step of the review process was new to me and I was always checking that what I was doing/had completed was correct, which I feel has helped me to develop new skills. Only nine studies met the inclusion criteria and of those, only one compared the perceptions of all three individuals; people with epilepsy, health professionals and the public. The review highlights the need for more education about epilepsy and how it can affect an individual to all physicians and members of the public who interact or work with patients with epilepsy. Another challenging part of this review was the Quality Assessment tool for Quantitative studies that I completed for each of the nine studies. This was a new assessment tool to me that I had not used previously and I felt initially confused on how to use this most effectively. However, with more research, practice and supervision, I feel as though this is another skill I could develop for further research in the future. I am also hoping to get this review published to increase my list of publications.

The competency I feel I developed in the most is the consultancy, section C4 (page 276), which will illustrate one consultancy project where I designed and developed a Smoking in Pregnancy scheme and educational project. The idea of this consultancy came directly from Public Health, who asked me to target the pregnant women who smoke and decline a referral to the stop smoking service. This gave me the opportunity to work with a range of different health professionals working at different levels, including service leads, locality managers, maternity department, consultants and commissioners within maternal health. This was a new opportunity for me and I was given the responsibility to design and develop the individual sessions delivered to these pregnant smokers. The idea was to work directly with maternity services, specifically the Public Health Specialist Midwife, to deliver this educational session to the pregnant women with the hope for them to decide to try and stop smoking and work directly with the community midwives to ensure appropriate referrals. This was the biggest challenge for me over the duration of the course, as it involved working at such a high level on important and relevant work. Throughout the project, it became a big interest for other services within

the East of England, in which I was asked to deliver a presentation of the project and the results gained throughout at various meetings and conferences. Despite being terrified initially, my confidence grew quickly and I was pleased with the overall outcomes of this work. This gave me the opportunity to develop in a way that was not available within my normal role and I feel that it has contributed enormously to the health professional I have become today.

Following this, the competency I was most worried about completing was the teaching and training, (section C5, page 319) as I did not feel I had the confidence to deliver a teaching or training session. At the beginning of the course, I had never delivered any teaching or training sessions and did not feel it was something I would enjoy. I felt that it was important for me to embrace this opportunity, knowing it was important for these feelings to change by the end of the course. Therefore, this was the first competency I chose to complete. I started by delivering two lectures at the university for both undergraduate and postgraduate level students. Initially, I was concerned about the content of the lectures and my ability to teach others information. However, after some guidance and support from my peers and during supervision, I feel that I delivered two effective and interesting lectures to students leaving me able to complete the competency report. Following this, I was keen to increase my confidence further within this competency and I could start delivering training sessions within my role for the Level 2 Stop Smoking Advisor Training. Upon completion of this training, trainees are qualified and competent to support and guide individuals to stop smoking and so it was important for me to deliver an effective training. This was a full two-day course that involved both delivering information and interactive sessions with an online assessment to complete their training. I think that this has helped me tremendously in building my confidence delivering training and I was able to continue this further and deliver the Make Every Contact Count (MECC) to other health professionals where needed. Finally, by the end of the course, I was training other staff members to deliver these two training sessions so there were more staff available when needed. This has allowed me to develop as an autonomous practitioner in both skills and confidence and I feel that it has prepared me for the delivery of future training.

The competency I feel I sit most naturally in and throughout the course of the doctorate I delivered many behaviour change interventions, (Section C2, page 30). Throughout my training, I was regularly delivering interventions to clients who wanted to stop smoking and helping to support them through their behaviour change. Therefore, I decided to increase my knowledge and skills to a different area for the intervention report. I had the opportunity to work with a Child Weight Management Team at delivering a physical activity session at the end of each nutritional session within their programmes. This allowed me to develop the skills and experience needed to work with young children and their

families in a health setting within weight management, not just adults. I enjoyed delivering these physical activity sessions and although initially, I was not sure how to deliver an effective session to children, the team were a great support. I am pleased that the outcome of the intervention increased attendance rates and later became an important part of their child weight management programmes.

Section C1 (page 9) of this portfolio demonstrates the other skills which I developed over the two years to become a competent Health Psychologist, including how I developed as a reflective practitioner. The competencies gained throughout the training has given me the opportunity to develop and practise as a health psychologist. I feel lucky to have had the opportunities to grow my confidence and skills as a health psychologist and have engaged in continued professional development throughout the two years and will continue to do this throughout my career.

In conclusion, this portfolio has shown the learning process of becoming a health psychologist by completing all the competencies in the areas of research, a systematic review, behaviour change interventions, teaching and training, consultancy and professional skills. I feel much more confident and competent as someone who has transferable skills to apply health psychology skills and knowledge to future practise and I hope to continue developing in this way.

SECTION C1

GENERIC PROFESSIONAL SKILLS

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Introduction

This reflective commentary will describe and discuss my professional practise as a trainee Health Psychologist over the past two years in my role as a Specialist Stop Smoking Advisor and Smoking in Pregnancy Lead for Live Well Luton.

1.1 Professional Autonomy and Accountability

1.1a Practise within the Legal Professional Boundaries

During my time as a trainee Health Psychologist I have consistently followed the legal professional and ethical boundaries in line with the British Psychological Society standards, (BPS, 2009) and the Health and Care Professions Council standards, (Health and Care Professions Council, 2012).

My role has involved working directly with clients and having access to sensitive information, which I have been recording using an appropriate secure system in accordance with the Data Protection Act, 1998. For example, as part of my role, I am regularly taking on new referrals for clients who want to stop smoking. This involves taking and inputting client details, such as personal identifiable information, medication use and their smoking cessation treatment plan onto an online system called One System For Health. I also have access to System One when seeing clients in a GP surgery, in which I have access to the clients' health background and personal information when needed. In all situations, I ensured that I only used the information necessary for me to understand and support the client's needs and was responsible for my own log in details. It was ensured, with each client, that they had discussed and understood what information we held, how it would be used and made sure I

had full consent before sharing any information with other colleagues. It is not always possible for the same person to see each client at every appointment due to staff and client absences from appointments. Therefore, it is important for the client to understand that their information is shared within the online system so other people can support them and understand their progress so far. Following this, within smoking cessation, when a client is keen to use Champix (a medication prescribed by a GP), it is essential for me to inform the GP about this so they can prescribe the medication, update their own medical records of their patient and monitor any side effects. During my consultancy project, I was working with pregnant women who were smoking and had declined support to stop but agreed to an appointment with myself and a specialist midwife to discuss the risks. I found this gave me the opportunity to develop my confidence and competence within risk assessment as this often involved home visits and a more challenging atmosphere. As there were always two of us and we were from separate services, it was important for the clients to understand information sharing between the two services so we could discuss treatment and any necessary referral pathways. This also meant ensuring we had full consent from each client before discussing their treatment with any other service that may be necessary for their own safety and effective treatment plans.

Throughout the duration of the course, I had the chance to enhance and develop my management experience. I was given the opportunity to supervise another Stop Smoking Advisor ensuring they worked in accordance with the NHS Confidentiality Code of Practice (Department of Health, 2003). This would mean that I would ensure they were trained to an appropriate level and worked to the correct guidance on the protocol in keeping patient data securely stored. I also had the opportunity to manage a new project alongside Public Health to help support pregnant women to stop smoking for my Consultancy competency. This

involved dealing with pregnant women on a sensitive subject, such as smoking, when they had already declined contact with the service. It was ensured that this project followed the NHS Confidentiality Code of Practice, (Department of Health, 2003), so that no confidential data was shared between us until full consent had been given from the client.

Following this, I demonstrated my ability for practicing within legal ethical boundaries when I was delivering my Intervention competency, I worked within a different service helping support children and families to lose weight. Throughout this project I ensured that all patient identifiable information was inputted onto the online system in a timely manner and the paper copies were shredded. This project also involved working with families in a group setting as opposed to one-to-one, this meant that it was important throughout the sessions to ensure each child and parent felt supported in their decision to take part. It was also important to ensure each family knew that they could withdraw from the programme at any point and their paper information would be destroyed. These sessions also involved measuring the children's weight and height, this was always done in a separate room or a sheltered part of the room so no one else would see or hear their results and again, once inputted to the online system it was shredded. Throughout this time, I have always worked in a non-discriminatory and non-judgmental manner to ensure the correct support and level of service throughout their treatment. During the intervention, when working with families and children who are overweight, it is important to remain non-judgmental and supportive throughout, especially if they do not lose weight every week, as expected. This is similar with the consultancy, I was regularly working with pregnant women who were smoking and it was important to remain non-judgemental and sensitive to their situation throughout to allow them to feel supported and trusting through their treatment, this is especially the case when they relapse.

Finally, when conducting my quantitative research on the smoking cessation, I collected sensitive data such as age, gender, ethnicity, weight and smoking status, as well as ensuring it was securely stored in a locked cabinet to safeguard the confidentiality of the participants. Following this, I have also regularly worked with clients from different backgrounds and religions or cultures and it is important to always treat each person respectfully and equally. The area in which I have completed my two years of professional practise has a high South Asian population, which means that it is important to take this into consideration when booking appointments or discussing behaviour change topics due to their prayer times or Ramadan fasting period.

1.1b Practise as an Autonomous Professional

Over the duration of the course, I have practised as an autonomous professional, regularly using initiative and making decisions on my own where possible but also knowing when to refer to another professional for advice. I have used a range of ways to monitor and improve my professional development and reflect on my professional experiences, including regular individual supervision with supervisors and group supervisions with other trainees. I found the group supervision particularly useful as I could develop my learning as a health professional by discussing different aspects of the course and professional skills. It also allowed me to help support other members of the course to develop further as well. On reflection, even though I did find the peer supervision sessions useful, I felt that this could have been improved with obligatory attendance from all trainees. I did find that at times, it was difficult to get the most out of the sessions when not all trainees attended due to other commitments. However, this cannot always be helped and it was good to be able to speak to different people each time. Individual supervision sessions with my university supervisor and

workplace supervisor have also provided me with the support needed to continue my personal and professional development, whilst reviewing my progress of development as a competent health psychologist, such as work challenges and their emotional strain, which has enabled me to build up my professional resilience (Rajan-Rankin, 2013). This also allowed me to develop with my reflections and become a more reflective practitioner throughout the course.

During the process of each competency, it was my responsibility to research and develop ideas for each report and discuss this with management. Through the process of the intervention, I was meeting and contacting with the Child Weight Management Lead, but the idea of the intervention, design and implementation was my own decisions and autonomous working. This is like the consultancy project, although the main idea was through Luton Borough Council to set up the scheme for pregnant women, I was the one who set up the process of the project and implemented it. It was also my responsibility to manage this process and caseload the women within the project, regularly reporting back to Luton Borough Council and Public Health with the results, but allowing me to have the ultimate decisions within this. This also involved managing other staff members to deliver parts of the project and ensuring everything was available for them to do so. It was essential to have the experience and skills to work as an autonomous professional throughout this process to keep the project running smoothly. I found this one of the most challenging parts of the course, to ensure that I remained professional throughout, when it appeared that other health professionals within the consultancy were not doing the same. I feel that this has helped me to improve and develop most as an autonomous practitioner as there were times when I have minimal support. Following this, at the beginning of the course, I felt most apprehensive about delivering a teaching or training session and so this was the first competency I decided to try and deliver. I felt that by doing this first, I was fighting my fears and allowing myself

enough time to get adequate experience and improve confidence throughout the course. I am now regularly delivering training sessions within my professional practise on different topics, to different health professionals and this is a competency I feel I have developed my confidence the most with and I am most pleased with.

One of the main challenges within the completion of the two years professional practise was time management due to working full time and working on this course full time. It was important for me to develop the skills to manage time appropriately and prioritise work using strategies, such as 'to do' lists and calendars. I felt this was important to learn to do effectively to allow me to fully manage the demands of work, study and personal life. It was important to continue self-reflection during these difficult times as it enabled reflective learning, which allowed me to be aware of and discuss any difficult or stressful times I was experiencing with others. I feel that this has been an ongoing process of development which I gained mainly through reflective practise and using my professional logs where I would use the model of reflection (Gibbs, 1988). Using this model meant that I could use my logs to describe and evaluate various challenges or experiences related to my everyday practice, analyse what happened, how it could be improved and what I could do differently next time, (Gibbs, 1988). This has helped increase my confidence in every day practise working as an autonomous practitioner in a health psychology setting, which is something I felt more challenging at the beginning.

1.1c Demonstrate the Need to Engage in Continuing Professional Development

Over the two years of the course, I have actively sought opportunities to engage in continuing professional development, including attending all the London Metropolitan University Health

Psychology Professional Doctorate lectures and workshops, as well as regularly engaging in supervision. This has given me the opportunity to learn new background knowledge and skills in working as a professional within Health Psychology, as well as ways to be able to put this new knowledge into practise. Following this, it has given me plenty of opportunities to discuss and resolve any issues in professional practise with peers on the course, in which we have supported each other to develop and resolve any issues that have arisen.

Being a member of the British Psychological Society, (BPS) and within this a member of the Division of Health Psychology, has been a useful way to keep up to date with developments in the profession. I have attended conferences and events that have been organised through the BPS to ensure that I am up to date and involved with the current work that is going on in Health Psychology. This has included the first Applied Health Psychology Practitioner Conference that I attended, which focused on bringing all Health Psychologists and trainees together to discuss ways we can improve and develop the area of Health Psychology and networking. I am a member of Health Psychology in Public Health and I regularly attend their conferences on different topics within Health Psychology on a quarterly basis. I find this useful for my own practise as it allows me to link my own professional practise together with other work that is going on. I regularly network and talk to other professionals about my area of work and research to open myself up to any future opportunities that may arise. Following this, due to my new title as Smoking in Pregnancy Lead in Luton, it is part of my role to be involved with the Smoking in Pregnancy network for Luton, Bedfordshire and the East of England. This involves attending regular meetings and conferences on the topic of Smoking in Pregnancy for us all to work together to help support pregnant women to stop smoking and the best ways we can do this. I have enjoyed taking on this new role and it has given me the opportunity to work with different health professionals of all levels, including midwives,

service managers, commissioners and consultants, which has been a great development opportunity for me. This has allowed me to build my knowledge and skills in this area, build my confidence in working at such a high level, as well as having such an active participation within the meetings and outcomes of this area of work. I feel that this was the most challenging at times, working with a wide variety of health professionals on a mutual topic to agree a way of moving forward. However, this has allowed me to understand and participate in changes to local and national policies related to smoking in pregnancy and I feel this has increased my confidence in my individual opinions.

I have taken part in other professional training course as part of my employment, which has been beneficial to my professional practise, such as Motivational Interviewing training. This was full day training on two different occasions in which we learnt the principals of Motivational Interviewing in more detail and had time to practise. In between the two sessions, we were given the opportunity to use this new training and the skills we learnt to practise on clients and help support them to change their behaviour more effectively. This was then continued further into the second day to allow us to discuss and resolve any challenges that arose and develop motivational interviewing skills further. Within my placement, I have had the opportunity to attend webinars for smoking cessation to improve clinical practise organised by the National Centre for Smoking Cessation Training (NCSCT), training sessions on delivering training to other health professionals as well as keeping up to date on mandatory training.

Finally, other opportunities that I have embraced to develop are actively seeking feedback throughout the course for my own work and responded to feedback effectively. I used the

'active learning' method, (Felder & Brent, 2004), to actively participate in learning and evaluate the process of this. I feel that I have effectively done this throughout each competency, to ensure that my learning is continuous throughout the course and I am developing my skills to the right level. I have used my reflective logs and commentary for each competency throughout the course to think back as to what I did well and what could have been improved on to help me to identify areas of improvement to work on. This enabled me to use Kolb's model of reflection, (Kolb, 1984) to reflect on my previous work, look at ways of improving and act on this effectively. Following this, I have had to regularly present information about my consultancy project, the outcomes and future possibilities for them to use and develop in their own services, which is something I would not have had the knowledge or confidence to do before starting this course.

1.2 Professional Skills

1.2a Communicate Effectively

I feel that when working as an autonomous practitioner with other health professionals and clients, it is so important to have a high level of communication skills and be aware of how your communicative behaviour can affect others. This includes, not only verbal communication but non-verbal communication and how this can change with individuals for various reasons, including: culture, age, ethnicity or religion, (Professional Practice Board of the British Psychological Society, 2008). Over the two years, I feel that I have developed my awareness of my own communication and different ways others may communicate and I feel confident at communicating with a varied audience from health professionals to clients and students. I have had the opportunity to develop my communication skills in different ways

from delivering information to students and health professionals to writing detailed reports to commissioners and service leaders.

In my main role and within my competencies, it was important to be aware of different communication skills and how they can affect people differently. During my consultancy project, it was essential for me to communicate appropriately and effectively with the pregnant clients so they felt comfortable and happy coming back for future appointments. A part of the role was discussing sensitive issues, such as Carbon Monoxide from cigarettes being a poisonous gas to themselves and the baby, which was a difficult topic to approach. I felt that this was challenging at times, as some of the clients did get upset during our sessions and it was important to remain empathetic and supportive and without judgment throughout. The communication skills used during these sessions are of the highest level and was not always easy, but with the support of the Specialist Midwife, we knew it was important to discuss these topics whilst maintaining sensitivity to the issue. It was important to remain calm and clear throughout the sessions as it was important to be able to explain the service offered to them effectively, so they knew what was available and safe for them to use during their pregnancy to help them to stop smoking. This involved discussing and prescribing pharmaceutical products and ensuring they felt supported and understood with the decision they made, whether it was to stop smoking or not. This was quite a new type of face-to-face session for me and it did take some time for me to feel confident at delivering these sessions, however, I feel that the more pregnant smokers we saw, the more confident I became about talking to them about such a sensitive matter, (Kolb, 1984). There were occasions when the pregnant women could be aggressive or rude when discussing the topics and this would be most challenging. It was important to remain calm and sensitive to their situation throughout

and I feel that this almost always improved the situation. I feel that this has helped me to understand and manage more difficult scenarios better when working with sensitive issues.

Furthermore, throughout this consultancy project and my new role as Smoking in Pregnancy Lead, it allowed me to develop my skills and confidence working with a range of health professionals. This included the regular smoking in pregnancy meetings I was attending locally and nationally and playing an active part in the development of the services. This also allowed me to work directly with health professionals of a much higher level and deliver presentations about the work we have been doing with the consultancy project. This involved using communication skills effectively to ensure that all people present at the meetings were clear with what we were delivering, the outcomes and potential for future services. I think that even though I had a high level of experience communicating effectively before starting the course, my experience over the two years has allowed this to develop further and I now feel much confident at communicating effectively in a wider range of situations.

Finally, as part of my intervention project, I was given the opportunity to work with children instead of adults. I found this a big change for myself and initially did not feel confident when working with a big group of children. After working with the child weight management team, I quickly learnt the best way to communicate with the children and families and feel that it has helped me to develop communications skills to talk about sensitive issues with people of all ages. I found that by making topics and activities seem fun, which initially, I found challenging, with some support from the team and practise, I feel that this improved significantly and I was able to engage the children and families effectively.

1.2b Provide Appropriate Advice and Guidance on Concepts and Evidence Derived from Health Psychology.

It has been a big part of my development as a Health Psychologist to understand and recognise when it is appropriate to offer guidance and advice on Health Psychology concepts and evidence. During my two years practise, I have developed my skills to now regularly delivering the Level 2 Stop Smoking training confidently and knowledgeably. This involves using the Stages of Change Model, (Prochaksa & DiClemente, 1984) to explain a client's readiness to quit and how to help support them within the different stages of the cycle. Within this, I am also training and delivering information and evidence on Motivational Interviewing, (Miller & Rollnick, 1995) and how to use this to have the most positive effect on client's who are trying to change their behaviour and stop smoking. It is important to ensure the trainees are confident about using these techniques within their sessions with clients so they are observed practising talking about all the evidence based techniques in behaviour change.

Following this, I have had the opportunity to deliver lectures to undergraduate university students on Health Psychology, what it is and how it is used. This has given me the practise of discussing Health Psychology concepts and evidence to a range of different people, both health professionals and students. I am regularly discussing the principals of Health Psychology with clients, when discussing their behaviour change journey and trying to help support them to find the most effective way to change their behaviour. This again, uses both the Stages of Change Model, (Prochaska & DiClements, 1984) and Motivational Interviewing, (Miller & Rollnick, 1995). Following this, I have also had the opportunity of presenting my consultancy work at various meetings and conferences within the area of

Smoking in Pregnancy in the East of England. This has allowed me to deliver information and evidence about Health Psychology concepts and practise and the direct affect it can have on pregnant women.

Finally, my systematic review was an opportunity for me to provide advice and evidence on driving and epilepsy. I feel this was one of the competencies I was most scared of completing, I was unsure how to complete one and felt I would need support to do so. This was very challenging and time consuming but as I got further in to the topic and research, I enjoyed doing this and felt more confident working on my own as it progressed. Finally, I was proud of what I had accomplished once I had completed it. I feel that there is some research on the topic of epilepsy and driving and how different people perceive this, but no review and so I feel I have been able to provide advice and evidence on this topic within health psychology.

1.2c Effectively Build Alliances and Engage in Collaborative Working

This course has enabled me to work with a range of health professionals in different settings and work collaboratively together on various topics. Firstly, during my current role within smoking cessation, I am regularly working as a part of the stop smoking team to ensure a high-level service is delivered and targets are met. It is important for us to work collaboratively together to ensure that the service is consistent and effective. I also had to ensure I consistently had an active engagement in team meetings, department meetings, staff away days, and supervision sessions. Following this, during my consultancy project, it was important for me to build alliances with maternity services to successfully gain the smoking in pregnancy referrals and work collaboratively with them to ensure they are stocked up with

Carbon Monoxide monitors, referral forms and had my contact details should they run out. I have had the opportunity to work specifically with the Public Health Specialist midwife, in which it was important to build an alliance with her and work collaboratively to allow us to successfully work on the consultancy project together and effectively deliver a service to the pregnant women. We had to regularly meet to go through referrals, book clients in and deliver sessions together. We worked together on the Carbon Monoxide monitoring pathway for all community midwives and organised training for them to effectively use the Carbon Monoxide monitors with pregnant women and feel confident in talking to them about this. This was important to make sure that we worked well together and any problems that arose, it was important we worked through them together to continue our professional relationship.

I have had the opportunity to work with other health professionals and different teams throughout the two years. During my intervention, I was able to build a new professional relationship with the Child Weight Management Lead to design and deliver an appropriate intervention for their children programme. This involved regular meetings to discuss the plan for the intervention, the best way to implement it, delivering it and evaluating the results and it was important to work collaboratively on this to allow this to be successful. I also had the opportunity to work with Smoking in Pregnancy Leads for different services within the UK as part of my Smoking in Pregnancy Lead role, which involved working collaboratively at meetings and conferences to try and lower the number of pregnant women smoking locally.

I feel that by having the opportunity to work with a range of different health professionals has allowed me to develop my own professional skills to a higher standard. To be able to watch and learn from different people on how they deliver an effective service, has given me the

opportunity to use this to work alongside them and independently in my own way to continue to improve my own skills and development. It has given me the confidence to work for a range of services and with a range of health professionals.

1.2d Lead Groups or Teams Effectively

Over the duration of the course, I have had the opportunity to lead groups or teams effectively and I feel more confident about taking on more of a management role. I have had the opportunity to manage another Stop Smoking Advisor and would always ensure that I conducted regular one to one meetings to review their training and progress within their role. It gave us time to discuss and resolve any challenges that had arisen and encouraged them to be open about anything that they felt necessary. I enjoyed taking on this new role to support others to develop and deliver an effective service but also for them to be happy within their role and I feel more confident doing this for future positions. I was given the opportunity to be given feedback for this from my own line manager to help me to continue to develop and it was mainly positive, that I worked within guidelines and helped support and engage with employees to deliver an effective service throughout.

Following this, I have had the opportunity to manage a Smoking in Pregnancy incentive scheme as part of my consultancy project. Within this, my role was to manage the project but also manage the stop smoking team at delivering the project to pregnant women. This involved an initial handover to the team, regular team meetings to discuss any issues and resolve problems and manage the vouchers and packs handed out to the women. This was challenging at times, to ensure that all team members were following the correct pathway and giving out the same messages and information. A part of this project was also to receive the

Smoking in Pregnancy referrals directly from the midwives and I would then contact them and forward them on to colleagues within the stop smoking team. It would be my responsibility to manage this process and ensure a seamless referral pathway, contact and booking system and for all appointments to be delivered the same. Following this, I have had the opportunity to be involved with the management of the stop smoking team over the last few months of the course. The stop smoking service manager left for maternity leave and her role had not been filled, therefore it was still important to ensure a smooth running of the stop smoking service and team meetings. I took this on to make sure that all members of the team continued to feel supported and that they had someone they could talk to if they had any worries or queries. As a part of this role, I created agendas for team meetings and then led the meeting to ensure that all points were discussed and problems resolved. This allowed the staff to feel comfortable expressing any concerns that I could feed back to the head of service, if necessary.

Finally, I have been training other members of the team on how to deliver the level 2 stop smoking training and the MECC training. As I am the only person fully trained and confident at delivering, it was thought to be important to train others to be competent at delivering in case of an emergency. Therefore, I have had the opportunity of organising other staff members to ensure that there has been someone available to shadow the last few training sessions I have delivered and played an active part in the delivery of the training. I feel that this has helped to increase my confidence at delivering training and teaching others to be able to do this. Fortunately, it has been successful with now seven other team members competent at delivering the MECC training and two others competent at delivering the level 2 stop smoking training. This has been a big transition for me over the past two years because

initially I was worried about delivering training and I am now training others to deliver, which I feel has been a big area of development within my professional skills.

Overall, I feel that I have improved and developed in all areas as a health professional and health psychologist. I have completed all competencies in a wide range of topics within health psychology and had to face many fears along the way. My biggest fears at the beginning of the two years were teaching and training and the systematic review, which I decided to approach first to face my fears and help increase my confidence and experience of this. This has given me the time and the opportunities to continue to develop these skills throughout the two years and I am now proud to be regularly delivering training sessions. I feel that throughout this course, there have been many challenges I have been faced with, such as with the transition in my role from the consultancy project. I feel that this project has given me the opportunity to develop the most as an autonomous practitioner as I was working at a much higher level, with a much wider range of health professionals and in such a sensitive but important area of public health. This has been a great opportunity for networking and developing my own role but also to allow me to develop as a reflective practitioner. I am proud of what I have achieved and feel it has prepared me for future opportunities that may arise.

References

Department of Health. (2003). Confidentiality: NHS Code of Practice. Retrieved 30/06/2017 from

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200146/Confid

entiality_-_NHS_Code_of_Practice.pdf.

Ethics Committee of the British Psychological Society. (2009). Code of ethics and conduct.

Leicester, UK: The British Psychological Society.

Felder, R. M. & Brent, R. (2004). How to evaluate teaching. Chemical Engineering

Education, 38(3), 200-202.

Gibbs, G. (1988). Learning by doing: a guide to teaching and learning methods. Oxford:

Oxford.

Health and Care Professions Council. (2012). Standards of proficiency: practitioner

psychologist. Retrieved 30/06/2017, 2014 from http://www.hcpc-

uk.org.uk/assets/documents/10002963SOP_Practitioner_psychologists.pdf.

Kolb (1984) cited in Rogers, A. & Horrock, N. (2010). Teaching Adults (6th Ed.).

Maidenhead, Berkshire, England: Open University Press.

Miller, W. R., & Rollnick, S., (1995). What is Motivational Interviewing? *Behavioural and

Cognitive Psychotherapy.* 23(4), 325-334.

Prochaska, J. O., & DiClemente, C. C., (1984). Cited in Morrison, V., & Bennett, P., (2006).

An Introduction to Health Psychology. Essex, UK: Pearson Education Limited.

Professional Practice Board of the British Psychological Society. (2008). Generic

Professional Practice Guidelines. Retrieved 30/06/2017 from

http://www.bps.org.uk/sites/default/files/documents/generic_professional_practice_guideline
s.pdf.

Rajan-Rankin, S. (2013). Self-Identity, Embodiment and the Development of Emotional
Resilience. *The British Journal of Social Work*, 1-17.

SECTION C2

BEHAVIOUR CHANGE INTERVENTION COMPETENCY

The Development and evaluation of a physical activity session within a child weight management programme.

Contents

Overview

This report will include the development and evaluation of a child weight management exercise programme, which was delivered in a group with me, the child and the parent for an integrated programme including both nutritional advice and an exercise session. Currently, the service is run by child weight management practitioners who are nutritionally trained and only contains a fortnightly hour long nutritional session. I will develop and implement a half an hour's session at the end of the nutritional session by the child weight management team. Rather than just a one-off session, in group one: both the child and parent were offered 10 weekly exercise sessions as part of the weight management programmes and group 2: both the child and parents were offered a fortnightly exercise session as part of their weight management programme. This will allow me to compare how effective an exercise session is on the drop-out rates and weight loss of the children. The child weight management team will continue running one-to-one clinics as well, which does not contain an exercise session as another comparison.

2.1a – Design and Implement health psychology baseline assessments of behaviour related to health outcomes

Obesity is one of the most serious threats to the health of the UK and has increased from 16.4% in 1993 to 25.1% in women and from 13.2% to 24.4% in men, (National Obesity Forum, 2015). The UK has the highest level of obesity in Western Europe, ahead of countries such as France, Germany, Spain and Sweden, (NHS choices, 2015). Obesity levels in the UK, in the last 30 years, have increased rapidly and have more than trebled, (NHS choices, 2015). Currently, in the UK, 24.8% of adults are obese and 61.7% are either overweight or obese, (National statistics, 2013) and it is estimated that by 2050, more than half of the population could be obese, (NHS choice, 2015). In adults, obesity is commonly defined as a body mass index (BMI) of 30 or more and it is associated with many common health problems, such as type 2 diabetes, cardiovascular disease and cancer, (Public Health England, 2016). The cost of the health problems relating to obesity, on the NHS, is estimated to reach £9.7 billion by 2050, which shows the current and future pressures on Public Health, (Public Health England, 2016).

Obesity occurs when energy intake from food and drink is higher in energy than the body is burning through metabolism and physical activity over a long period of time, which results in an increase in body fat, (Public Health England, 2016). Due to the amount of high-fat and high-sugar foods available, it has become very easy to consume more energy than is needed, (Morris et al, 2015). However, obesity is a lot more complex than just energy intake and energy burned, it is also important to consider the psychological and behavioural aspects involved, (Public Health England, 2016). There has been a lot of emphasis on the role of diet within obesity, but not so much the psychological factors, (BPS, 2011). It has been shown to be very important to consider all factors: diet, exercise and psychology when delivering behaviour change interventions to be as effective as possible, (BPS, 2011).

The research on obesity shows the importance of reducing the numbers of obese or overweight individuals in the UK, (Raaijmakers et al, 2015), to try to increase the health of the nation and reduce costs to the government and NHS, (Hollingworth et al, 2012). An effective way to try to tackle the issue of obesity in the UK has been found by delivering interventions to help individuals and families to eat healthier and exercise more, (Raaijmakers et al, 2015; Hollingworth et al, 2012; Naslund et al, 2016; HakGweon & YoungHo, 2015; Gortmaker et al, 2015). Due to the number of adults with obesity increasing, it shows that the scale of the problem is only going to continue to grow and shows the importance of delivering interventions to children and young adults to prevent this from developing into adulthood, (National Obesity Forum, 2015). Without these interventions, the risk of children and young people becoming even more sedentary is high, due to the decreased levels of physical activity and minimal consumption of fruit and vegetables, the likelihood of being overweight or obese is increasing, (National Obesity Forum, 2015).

Weight management and obesity is also causing problems amongst children and young people, 33.5% of Year 6 children (10-11 years old) are overweight or obese, (National Obesity Forum, 2015) and 21.9% of children in reception (aged 4-5) were overweight or obese, (Public Health England, 2016). Obese children and adolescents have an increased risk of developing health problems, and are also more likely to become obese when adult, (Public Health England, 2016). The National Child Measurement Programme (NCMP) measures the height and weight of school children in England, providing important information of the

prevalence of child obesity, (Public Health England, 2016). It is thought that, if childhood obesity is untreated, 85% of the current overweight children will become obese adults, (More-life, 2014).

Nowicka & Savoye, (2010) have highlighted the importance of finding ways to reduce the drop-out rates within interventions to reduce the problems we face in the future from obesity. Research shows the importance of making the content of the interventions engaging and interactive as drop-out rates can be high, (Hadžiabdić et al, 2015; Abrams, 2015) and the longer the interventions are, the higher the drop-out rates, (Melin et al, 2006). De Niet et al, (2011), found that parents from ethnic minorities were less likely to engage in the activities and therefore this increased drop-out rates from the children. However, binge-eaters have been found to be more likely to be obese but are less likely to drop-out of weight loss interventions, (Ho et al, 1995).

There has been a wealth of research looking into ways to prevent or manage childhood obesity, (Lee & Kim, 2015; Gortmaker et al, 2015; Chaplais et al, 2015; Cadzow et al, 2015; Morris et al, 2015; Yavuz, 2015; Price et al, 2015; Abrams, 2015; Werthmann, 2015) and by doing this it can be very cost-effective to the government compared with the health costs of obesity, (Gortmaker et al, 2015). It has been found that by involving parents as much as possible in the intervention makes it more effective, (Yavuz, 2015; Morris et al, 2015) and by combining both physical activity and nutritional information is also the best method for obesity interventions with children, (Lee & Kim, 2015; Cadzow et al, 2015). With children involved it is also very important to make the intervention as engaging and interactive as possible to keep their attention and interest to want to change their behaviour, (Abrams, 2015). This shows that delivering an activity session which engages both the child and the parent can help to improve their relationships as well as keep their engagement with the programmes, (Lee & Kim, 2015; Cadzow et al, 2015).

2.1b – Evaluate the pattern of behaviour and formulate working hypotheses about the target behaviour based on assessment

The aims of the service, Live Well Luton, is to try to help Luton residents become healthier by delivering free behaviour change interventions to stop smoking, manage weight for both adults and children, personal health plans to get more active and NHS health checks. My role is to deliver interventions to help people to stop smoking to help to reduce the health risks associated to smoking. Since I have a big interest in weight management and obesity, I decided to develop my intervention within the area of the child weight management service. It is very apparent within this service that the main issues they have are getting appropriate referrals from other health professionals and practitioners and the number of families that drop out from the service. I contacted the lead practitioner for the child weight management programme, to discuss what the potential barriers are to gaining referrals and reducing drop-out rates for the service. Following this, I could shadow a few of the child weight management one-to-one clinics and one of the child weight management programmes to understand the current programmes in more detail and what is offered. Within my meeting with the child weight management lead, it was noted that they feel the current referral pathways are already improving and they are gaining more appropriate, regular referrals in. It was agreed that the most important thing to focus on now is to increase the number of completers of the courses. Data from previous groups attendance rates were given by the child weight management service manager to show that there was a 50% dropout rate on all groups that had started in the last 12 months. Currently, the number of completers of each programmed is a maximum of 5, even if they have over 10 starters but it is under 50% for each group. This shows that for any programme that has started, only half of the families that signed up, completed the programme but all completers were losing weight. This shows that if we can increase the number of completers, we will increase the number of children losing weight overall. Even though the current completers do change their behaviour and go on to lose weight throughout the programme, this has been difficult to evaluate due to the lack of completers. This intervention would therefore be focusing on both the parents and the children that can be aged between 5 and 16 and something that can fit into an already tight schedule within the course. Since younger children have no control over what they eat, this is controlled by the parents, it is important to include both the parents and the children in the weight management process to educate the parents and the children for the future. From the

age of 13, children start to take more control into what they are eating, this may be at home or out with friends and therefore, would be more important to target the children directly.

Within the current child weight management service, both the children and the parents are involved in the nutritional information sessions within both the one-to-one clinics as well as the group programmes. After an in-depth discussion with the child weight management lead, it is thought that the best way to try to increase the weight loss and completers would be to add more interaction sessions for the children. It was agreed that I would design different physical activity sessions to deliver within the child weight management group programmes and compare the outcomes at the end of the 10 weeks with the results from previous group dropout rates (50%). It is thought that by delivering a physical activity session within the programmes for the children, it will increase the children's motivation engagement in the programme and in turn, reduce dropout rates. There will be two groups running simultaneously; they will both receive fortnightly nutritional session for an hour. Both groups will receive an activity session at the end of their one hour nutritional session but one group will also receive an hour's activity session the week in between. The physical activity sessions will be designed to suit children of all ages and both males and females. If the intervention turns out to be successful, the child weight management programme will be adapted to include a physical activity session in the future.

2.1c – Provide detailed feedback formulation on the outcome of the assessment and working hypotheses

The current child weight management programmes are delivered in different locations in Luton, either at a local school or sports centre. This means that there is enough room to include a physical activity session within them so this does not need to be adapted. It is important to make sure there is a local option to all families involved to increase uptake and reduce drop-out rates due to inability to attend. Previous research into the area of interventions for children, shows that interventions that take place in a convenient community or school setting are most effective (Cale & Harris, 2006; Donovan, 2000; NICE, 2013).

The intervention also needed to be as interactive as possible to keep the children's attention and keep them engaged, (NICE, 2013). This is a great reason as to why a physical activity session could be effective at keeping the children engaged, have fun and want to come back. Physical activity sessions are delivered within child weight management programmes across the country to improve cardiovascular fitness and to build confidence joining in with more sport sessions at school, (Cross Government Obesity Unit, 2009). Parents are also invited to take part in the physical activity sessions, this reinforces the importance of families working together and enjoy taking part in activities together. Fortunately, all child weight management practitioners are already trained to deliver exercise sessions to children.

2.1a-c – Reflection

By completing the baseline assessments, I felt confident to go on to design the intervention. The background research allowed me to develop my knowledge in obesity and childhood obesity and the importance of reducing this. It also allowed me to increase my knowledge in current interventions which are being delivered and what has been successful or not. By speaking to the current child weight management team, I feel that I could gain the understanding of the current programmes and a way to try and improve on this. I feel that by going through these baseline assessments, it allowed me to understand the area of obesity, especially childhood obesity, in more detail and I felt more able to design a more appropriate intervention that can help to improve the current service. I think that adequate research into the success of current and previous interventions was made and I could use this to develop a well-designed intervention.

2.1d – Design, plan and implement health psychology interventions based on the assessment and formulation

The physical activity sessions were developed by using evidence based exercises and activities designed by qualified exercise practitioners for children (NICE,2013). All child weight management practitioners have attended this training and able to deliver exercise sessions to children with me during the intervention. Further exercises chosen were general sports recommended for children as part of the NICE guidelines to get children more active,

(NICE, 2013). These include sports such as, football, netball, tag, skipping, tennis, running etc. and may also need to include other equipment or apparatus, which Live Well Luton are willing to purchase. I felt that whilst I was developing the intervention and the physical activity session, I thought it would be important to consult the child weight management practitioners and the Live Well Luton manager. This is to ensure they are all happy with the final content of the intervention as they could potentially be delivering it in the future and to ensure it meets current guidelines.

Ethical considerations

Ethical considerations were considered throughout the development of the intervention. The child weight management lead and head of service were consulted throughout the development of the intervention, giving their feedback on amendments and ensuring it meets ethical guidelines for children. Their permission was sought prior to commencing the physical activity sessions within the two groups. In addition, all child weight management practitioners were involved in the designing and implementing of the intervention to ensure they were happy with the delivery for future groups.

The programme content was explained to both the parents and child within an entry interview prior to starting the group, to ensure they fully understood the content of the physical activity session. This opportunity was used to explain that they would be asked to take part in a 30-minute activity session of different activities or sports at the end of the nutritional discussion. It would be recommended for both parent and child to get involved but they do not have to if they don't want to. If they choose not to take part, they can change their minds within any session and if they choose to take part but later decide they do not want to, it will not affect any other treatment they may receive. Both the parents and the children were debriefed at the end of each session to ensure they were happy with the session and if they needed any support after taking part in the session. It also gave them an opportunity to feedback how they feel about taking part in the activity sessions and any ideas for future sessions. At the end of the 10 sessions, each family (both parents and child) will be given an evaluation form to complete to offer any feedback regarding the activity session, (see appendix 1, page 59).

Upon reflection, I felt that the sessions went well and everyone (both parents and children) seemed keen to get involved. By having a plan (see appendix 2, page 94) of activities prior to the session, it was easier to get the families moving initially and to make the sessions flow better. The families seemed to interact well together as the sessions went on and they often seemed disappointed when it had finished. I felt that it was sometimes difficult to find an activity that everyone was happy to participate in but this often improved as the sessions went on. I feel that due to the experience of the child weight management practitioners I was working alongside, it allowed there to be more flexibility within the programme I had designed once started. The families were often keen to try new games, which were not always on the list but were similar and equally as active and safe. Even though I may not have felt as confident with these different activities, the other child weight management practitioners were more confident and this allowed the intervention to develop and become more diverse for the families. I feel that this worked well and shows the importance of having more than once person leading the group at any time.

Formulation of the intervention

The intervention was based on the Theory of Planned Behaviour (TPB) model, which was developed by Ajzen (1991). It is the most widely used model to predict health behaviours and has a vast amount of research to support how effective it is at predicting behaviours, (Ajzen, 1991; Brickell et al, 2006; Sheeran et al, 2003; Fife-Schaw et al, 2007). The theoretical construct of the TPB is the behavioural, normative and control beliefs about the behaviour. If they feel that a certain behaviour will be good for them, other people will do it as well or if they believe they can do it, then they are more likely to take part in the behaviour. This has shown to be effective at predicting how likely people are to start or continue exercising, (Leyland et al, 2014; Whitford & Jones, 2011; Dodd et al, 2012; Boudreau & Godin, 2007; Brickell et al, 2006).

The Theory of Planned Behaviour (TPB) started as the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and it was used to predict an individual's intention to engage in a behaviour. The theory was used to explain behaviours in which individuals have self-control and it was mainly used to predict behavioural intent. This occurs when behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected

outcome and the subjective evaluation of the risks and benefits of that outcome. The TPB states that whether a person engages in a behaviour depends on both motivation (intention) and ability (behavioural control). There are three types of beliefs: behavioural, normative, and control. There are 6 parts to the TPB, (Ajzen, 1991), which claims to represent a person's actual control over the behaviour. These are listed below with explanations of how they were applied to the intervention:

1. Attitudes - This refers to how much the individual likes the behaviour. Whether they like to exercise or feel that they would enjoy it. If it is possible to find certain sports or activities that everyone will like, they are more likely to take part in the sessions. One of the most important beliefs found when using the TPB to predict exercise behaviour is whether it would be a fun thing to do. The more fun it is perceived to be, the more likely they would want to take part and continue with it. This activity sessions within the intervention were very engaging and fun to try to maintain the attitudes of both the children and families that exercise is fun and enjoyable.

2. Behavioural intention - This refers to motivational factors that influence behaviour, so the more they intend on exercising, the more likely they will be to do so. If they are aware that they will be taking part prior to the session, they may have a higher intention. Therefore, the families are notified before starting the course that they will be asked to take part in an activity session as the end; this gives them plenty of notice prior to the sessions to increase their intentions of taking part.

3. Subjective norms - This relates to a person's beliefs about whether peers or others around them think they should exercise more. If other children and parents are taking part in the activity session, they might be more likely to take part. By including both the parents and the children in the intervention, it allows the families to feel it is normal to take part in physical activity and this can be done as a family. This will hopefully increase the likelihood of continuing with this outside of the sessions.

4. Social norms - This refers something that is considered 'normal' or acceptable to do in a group of people. If it becomes normal for these children to exercise or take part in activities/sports then they will be more likely to continue with it. Hopefully by taking part in this intervention, the children and families will both increase the amount of physical activity they are doing both during the sessions and in between and will continue with this after completing.

5. Perceived power - This refers to the perceived level of power to take part in a behaviour. It is related to the presence of factors that may facilitate or impede performance of exercising. Ensuring all exercises or activities are suitable for all ages and fitness levels so that all children and parents taking part feel they have the adequate level of power needed to take part. If they have done it before, they may feel more empowered in that particular activity or they may already be confident in their ability to exercise. By allowing the families to have some control over the activity choices within the sessions, it allows them to feel they have the power or confidence to take part as it is something familiar to them. This is the positive side to allowing the intervention to be flexible.

6. Perceived behavioural control (added for TPB) - This refers to a person's perception of the ease or difficulty of performing the particular exercises. This can have different levels in different situations. It can be closely related to perceived power in that if they believe that the activity/exercise is suitable for their level of fitness, they will feel they are able to take part. If they know they have control in deciding the exercises or know they can withdraw if they find it too difficult, they are more likely to try. Also, if they feel they have the correct knowledge, skills and resources to join in, they are more likely to. This allowed the intervention to be more flexible for the families, they felt as though they had more control over the activity choices and therefore were more motivated to take part.

The theory of planned behaviour was chosen as it has previously been applied to develop interventions to predict and improve exercise behaviours, (Leyland et al, 2014; Whitford & Jones, 2011; Dodd et al, 2012; Boudreau & Godin, 2007; Brickell et al, 2006). The basic premise of the TPB is that behaviour can be changed three ways: increase/decrease belief, create a belief, and increase/decrease a value, (Chatzisarantis & Hagger, 2005). If it is possible to change the beliefs of the families about exercise, that they can enjoy it together and have fun as part of the sessions then they will be more likely to continue with this outside of the sessions. If all the families join in with the activity session, it will become the 'norm' within the groups, which may then increase the likelihood of the families thinking it is the 'norm' outside of the groups. It is essential to ensure that all activities and exercises are at a level for both children and parents to join in and find fun together as this will encourage them

to continue with this and become more active together as a family. It will also help to build confidence in all individuals in their ability to exercise. For example, the activity sessions that were designed involved sports and games that are well-known that they would already have some experience at taking part in before, such as: football, basketball, football, tag, stuck in the mud, dodgeball, skipping, tennis, and running/relay. This is to build confidence in the belief that they can take part in physical activity, if others around them are also taking part in physical activity, they feel they have behavioural power and control over the exercise and are more likely to take part in future sessions.

The activity sessions developed were aimed to get the children more involved with physical activity, with the intention that they will build their confidence at taking part in exercise and will continue with this after completing the programme. It was also aimed to get the parents more involved with physical activity as well. It is thought that if parents are physically active, their children are more likely to be as well and it is a great way for the family to bond and have fun together doing something healthy, (Moore et al, 1991). It is hoped that by taking part in weekly or fortnightly physical activity sessions, not only with the children lose weight but will become more physically active as a family. This correlates well with the theory of self-efficacy, (Bandura, 1977), in that the exercise sessions will increase the family's belief in their ability to take part in regular physical activity. I felt that this supported the theory of the intervention well, as the higher the families' self-efficacy was about exercise, the more likely they are to take part in it.

This intervention could also have been based on the Health Belief Model (HBM), Janz and Becker, (1984). The theoretical construct of the HBM is based on perceived severity or susceptibility of a negative health outcome, the greater the perceived severity the increased likelihood of a change in health behaviour to prevent later negative outcomes. The HBM has been shown to be effective to use when designing interventions to help individuals to change health behaviours, (Al-Ali & Haddad, 2004; Juniper et al, 2004; Kasser & Kosma, 2012; O'Connell et al, 1985). However, research on how effective the HBM is for designing interventions for physical activity is weak, (Zimmerman & Vernberg, 1994). For this reason, it was decided that the TPB was better suited.

The HBM has four main components to understand health behaviour: perceived barriers of exercise (difficult, time consuming), perceived benefits of exercise (lose weight, good for heart and fitness), perceived susceptibility of disease (how likely to be obese, develop diabetes, stroke) and perceived severity of illness (how bad they think it would be to be obese, develop diabetes). If the individuals believe that exercising is good for them (perceived benefit) but don't believe they can do it (perceived barrier) then they are less likely to try it. This can help to explain why many people may not take part in the recommended level of physical activity, (Becker & Rosenstock, 1984).

The HBM links in well with the TPB in that self-efficacy is an important part to it, (Rosenstock, Strecher and Becker, 1988) and that people do not try to do something unless they believe they can do it. However, a review by Department of Health, (2007), found that there has been no evidence to suggest that the HBM based interventions have positively contributed to health outcomes in the UK and is weak in predicting behaviours in most areas of health, (Harrison et al, 1992). Whereas, the TPB has been widely use in the analysis of health behaviours, (Kashima & Gallois, 1993) and have been very successful in health promotion and behaviour change for exercise intentions and behaviours, (Ajzen & Driver, 1991; Godin, 1993; Blue, 1995; Hausenblas et al, 1997; Hagger et al, 2002; Downs & Hausenblas, 2005). Therefore, I have chosen the TPB to base my intervention on, instead of the HBM.

Although the HBM has been found to be effective when designing behaviour change interventions, there is minimal research to show that it is effective within physical activity interventions. The vast amount of research available for the TPB shows that this has been successfully used within interventions for physical activity. The HBM model looks more at perceived severity of an illness or how likely the individual feels they are to get that illness, which doesn't fit well within an intervention for children. Children often don't understand the implications of being overweight or possible illnesses this may cause and therefore this may not be an effective tactic. Whereas, the TPB looks at attitudes and intention if it is possible to change the attitudes of the children and families towards physical activity (show them it can be fun), they are more likely to take part and in turn, lose weight. By looking at the previous

research on the two models, it is clear to see that the TPB is more effective to use when designing behavioural change interventions within physical activity.

The intervention took place in three separate locations throughout Luton. The two child weight management groups were set up at two different schools within Luton in the evenings and the one-to-one clinics were set up at a local GP surgery. The children and families were recruited through Live Well Luton Child Weight Management service and booked into a one-to-one meeting with a child weight management practitioner in which they can decide their preferred course and discuss their current eating and physical activity habits. Currently, 90% of the families' reports taking part in no activity together and the only exercise the children take part in is at school.

Both child weight management groups were fortnightly for 10 sessions (20 weeks) and were invited to attend a physical activity session as part of the programme. Group one was offered a weekly physical activity session in between the fortnightly sessions and group two was only offered a physical activity session fortnightly as part of the programme. The one-to-one clinics at the GP surgery were offered a specific 30-minute appointment to cover what would be discussed in each of the 10 sessions in the groups but tailored more to the individual, they were not offered a physical activity session. Below is an outline of what is covered in each of the 10 nutritional sessions prior to the physical activity session:

1. Introduction session – meet and greet, take BMI measurements, importance of reducing obesity
2. Eat Well Plate – recommended guidelines for portions, food, exercise
3. Portion sizes – how to measure portion sizes for children
4. Eating regularly – not skipping meals due to reduction in blood sugar levels and craving high sugar foods, eating healthy breakfast, getting enough sleep
5. Separate session for parents and children
   - Parents – helping children to manage behaviour, positive reinforcement and praise, fussy eaters, saying no
   - Children – food and feelings – do they want to change? Why do we eat/what is hunger? Emotional eating.

6. Snacks/treats – what is a snack (healthy and regular), what is a treat (unhealthy, not often)
7. Supermarket tour – shopping healthy and on a budget
8. Sugar – how much sugar is in things we eat/drink? How to replace, packed lunches
9. Meals out/slip ups – what to pick on a meal out, what to do after slip ups
10. Feedback, BMI measurements, certificates of weight loss

At the end of each session, the families were taken into the sports hall and the activity plan was discussed. They were all reminded that it is not compulsory and they do not have to take part. At the beginning of each activity session, all children were asked if they had eaten and drunk enough water that day to take part in the activities. Once it was approved they are all ready to take part and they had all given consent (including parents), they were asked to take part in a warm up for 5 minutes. After completing the warm up, the activity rules were discussed and the activity was started. At the end of the activity session, both parents and children were asked to take part in the 5-minute cool down. After completing the session, they were all given the opportunity to approach a staff member with any questions or feedback before leaving.

Group 1: 9 starters, 8 completers, 1 dropout (11%)

Group 2: 15 starters, 4 completers, 1 dropout (7%)

Physical activity levels:

Baseline: no family exercise and children only exercising at school

After intervention: 13 out of 18 (questionnaires filled in) felt more confident to exercise on own and with family

2.1d – Reflection

I really enjoyed delivering this intervention, even though I am experienced at delivering interventions, this was something very different to what I have done before. I was a bit nervous initially about delivering a physical activity session but by having the other trained practitioners with me, I relaxed very quickly. They were confident at delivering the group

sessions and exercise sessions which I feel helped the sessions flow well and gave me the confidence to lead the sessions. I felt that sometimes it did get a bit chaotic with the families requesting to play different games that were not on the plan and was sometimes difficult to maintain control of the group activities. However, I was never on my own whilst delivering the sessions and after a quick ground rule reminder and change of activity, it calmed down and after this has happened once, I felt more confident on how to control the situation. I think this also helped to reduce this happening too often. I did feel that it was very important to have trained practitioners with me during the programme, it allowed the sessions to be more tailored to the individuals in the groups. At some points, the families were keen to take part in a different activity to the plan and this was often possible as the other practitioners knew the activities well. I feel that this allowed the families more freedom, which lead to an increased enjoyment and bonding for them.

2.1e – Evaluate and communicate the outcomes of health psychology interventions.

Both child weight management programme groups were evaluated based on attendance of the group and a post intervention questionnaire. This included a very brief questionnaire to both the children and the parents based on their thoughts of the group and the activity sessions. The enjoyment of the intervention was measured by attendance to the sessions, active participation within the activity sessions and the post intervention evaluation form.

Group 1, which had weekly activity sessions (one extra in between the fortnightly group education sessions), started with 9 attendees and finished with 8. Group 2, which had just a fortnightly activity session alongside the group education session, started with 15 attendees and finished with 14. This shows a big decrease in dropout rates from previously at 50% to now 11% dropout in group 1 and 7% dropout in group 2.

The children and parents rated the exercise sessions and answered three main questions in most of the forms. They were asked 'how do you feel about the amount of physical activity sessions' and they answered, 'not enough', 'about right' or 'too much'. In both groups, there was no person that thought there was 'too much' physical activity but most answered either 'about right' or 'not enough' even in the weekly activity group with 4 out of 5 saying 'not

enough' in group one and 7 out of 12 saying 'about right' in group two. They were also asked: 'how confident do you feel now exercising as a family after taking part in the sessions?' and they could answer 'not confident', 'unsure', 'a little confident' or 'very confident'. This question had a mixture of answers but only one person reported they were 'not confident' at all, most answers were 'very confident' or 'a little confident', however there were a few 'unsure'. The other question asked was 'how would you rate the physical activity sessions?' and they could answer 'excellent', 'good', 'poor' or 'very poor' and every person ticked either 'excellent' or 'good' in both groups. In group one, 3 out of 5 were likely to rate the physical activity sessions excellent and 2 out of 5 rated them good. In group 2, 2 out of 3 were likely to rate the physical activity sessions as excellent and 1 out of 3 rated them as good. This shows the activity sessions were very well received and most people enjoyed them. There were also many other questions asked relating to the child weight management group and the nutritional information for the other practitioners.

The children were also given a separate evaluation form with a few questions about the programme, including the physical activity sessions. They were asked what their favourite part of the sessions were and in both groups half of the children wrote their favourite part of the sessions was the activity sessions. They were also asked to tick 'yes' or 'no' if they enjoyed the physical activity sessions and every child ticked 'yes'. This shows that the children really enjoyed the physical activity sessions and worked well to keep their engagement with the programme.

By looking at the one-to-one sessions in comparison, they also had a 90% attendance rate, even though they had no activity session. I feel that because it is one-to-one, the service they receive is more tailored to the family. Therefore, this leads to an increased engagement as they feel they can get the specific information they need and feel more confident to ask questions.

Overall, the physical activity sessions seemed to be a success with both the children and the parents in both groups since more families were continuing to attend the programmes, losing weight and feeling more confident to exercise. It has led to decreased dropout rates within the

child weight management programme which is important to the service. Both the children and the parents got involved in the activity sessions and both seemed to really enjoy them. When designing the physical activity session, I felt that it was important to get an idea of what would be well received by the trained practitioners. I feel that this was beneficial to the designing of the activity sessions as I feel that they were more experienced in the types of exercises which have worked well before. However, as the dropout rate was the same for both groups, this does show that it is not necessary to have more physical activity sessions to maintain engagement, if there is some. In group one, even though they had the weekly physical activity session, 4 out of 5 said there was 'not enough' exercise and in group two, who only had a fortnightly activity session, 7 out of 12 said it was 'about right'. This shows again that they all really enjoyed the activity sessions and benefitted from it but it is so difficult to please everyone. Fortunately, the completers have continued to lose weight throughout the programmes and maintained the 90% of completers to lose weight, even though there are more completers than previously. This is excellent as this shows that when families complete the programme, they are losing weight and that adding in a physical activity session helps to maintain engagement of both the children and parents to go on to complete the programme.

Future Implications

With regards to the future, the activity sessions within a child weight management programmes have proven to be a great success at both increasing the enjoyment of the programmes but decreasing the dropout rates of the groups. If families continue to attend the service until the end and lose weight, there will be more children losing weight and changing their lifestyle. After discussing the results with the child weight management lead, they are keen to continue incorporating a physical activity session within their child weight management programmes and are currently writing a plan for a new group starting in June. Live Well Luton and the child weight management service are really pleased with the number of completers of both programmes due to the physical activity sessions and are keen to continue with this.

With regards to future implications of the activity sessions, this has had great results and shows that by engaging the families in a child weight management programme, it can

increase the number of children completing the service. This has a good implication for future work in this area, to try and reduce the rates of obesity in both children and further into adulthood. By continuing to use physical activity sessions as part of the child weight management programme, it is possible to increase the number of families completing the programmes and losing weight to a healthy level. It is also important in motivating children to take part in health behaviours, such as exercising and eating healthily, which can lead on to leading healthier lifestyles in adulthood.

Conclusion

Overall, I feel that the intervention went well and had the most desired outcome. It supported the child weight management team in the area they were finding most challenging, which were the dropout rates. Working with the child weight management team was helpful when designing the physical activity sessions, they could input their ideas and recommendations whilst I was designing the activity session plans and this helped with the overall success. I felt the intervention targeted both the children and the parents together and helped to increase the engagement with both and got the families interacting together better. I am pleased that this intervention has helped to reduce the dropout rates within the child weight management programmes and that the practitioners are pleased and confident to continue to use them throughout their future programmes.

2.1e – Reflection

I feel that this intervention went well and was successful in its plans to try and reduce dropout rates in the child weight management programmes. However, I do feel that there were other factors I could have included to measure the success of the intervention. Instead of looking at dropout rates alone, another option was to measure the weight loss of the children compared to previous groups before the intervention to see if this had increased due to the intervention. I feel that this could have strengthened the outcomes of the intervention if including physical activity increased weight loss. I feel that my confidence for running the groups improved with each session and even though it was new to me, I felt as though I could lead the groups better as the weeks went on. I really enjoyed this intervention and I feel that it has really

helped me to develop my professional skills and by working with other health professionals throughout, it allowed me to develop as a professional health psychologist.

References

Abrams, E.A., (2015). Food, health & choices: Development and formative evaluation of an innovative intervention to reduce childhood obesity. *Dissertation Abstracts International Section A: Humanities and Social Sciences.* 75(9-A)(E).

Ajzen, I. (1991) The theory of planned behaviour. *Organisational behaviour and human decision processes,* 50(**2**) 179-211.

Ajzen, I., & Driver, B. L., (1991). Prediction of Leisure participation from Behavioural, Normative and Control Beliefs – an application of the theory of planned behaviour. *Leisure Sciences.* 13(3), 185-204.

Ajzen, I., & Fishbein, M., (1980). *Understanding Attitudes and Predicting Social Behaviour*. University of Michigan: Prentice-Hall.

Al-Ali, N., & Haddad, L., (2004). The Effect of the Health Belief Model in Explaining Exercise Participation Among Jordanian Myocardial Infarction Patients. *Journal of Transcultural Nursing.* 15(2), 114-121.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review,* 84(**2**), 191-215.

Becker, M. H., & Rosenstock, I. M., (1984). Compliance with medical advice. In A. Steptoe & A. Matthews (ed.) *Health care and Human Behaviour.* London: Academic Press. Pp. 135-152.

Blue, C. L., (1995). The predictive capacity of the theory of reasoned action and the theory of planned behavior in exercise research: an integrated literature review. *Research in Nursing & Health*. 18(2), 105-121.

Boudreau, F., & Godin, G., (2007). Using the theory of planned behaviour to predict exercise intention in obese adults. *Canadian Journal of Nursing Research. 39(2), 112-125.*

Brickell, T. A., Chatzisarantis, N. L. D., & Pretty, G. M., (2006). Autonomy and Control: Augmenting the Validity of the Theory of Planned Behaviour in Predicting Exercise. *Journal of Health Psychology.* 11(1), 51-63.

British Psychological Society, Obesity in the UK: A Psychological Perspective, 2011. http://www.bps.org.uk/sites/default/files/images/pat_rep95_obesity_web.pdf. (Accessed: 29/3/16)

Cadzow, R. B., Chambers, M. K., & Sandell, A. M. D., (2015). School-based obesity intervention associated with three year decrease in student weight status in a low-income school district. *Journal of Community Health: The Publication for Health Promotion and Disease Prevention.* 40(4), 709-713.

Cale, L. and Harris, J., 2006. School-based physical activity interventions: effectiveness, trends, issues, implications and recommendations for practice. *Sport, Education and Society.* 11 (4), pp. 401 – 420.

Chaplais, E., Naughton, G., Thivel, D., Courteix, D., & Greene, D., (2015). Smartphone interventions for weight treatment and behavioral change in pediatric obesity: A systematic review. *Telemedicine and E-health.* 21(10), 822-830.

Cross-Government Obesity Unit, Healthy Weight, Healthy Lives: Child weight management programmes and training provider's framework. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213735/dh_098432.pdf. (Accessed: 30/3/16)

De Niet, J., Timman, R., Jongejan, M., Passchier, J., & Van den Akker, E., (2011). Predictors of participant dropout at various stages of a pediatric lifestyle program. *Pediatrics.* 127(1), e164-e170.

Department of Health, NHS, (2007). A review of the use of the Health Belief Model (HBM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB) and the Trans-theoretical model to study and predict health behaviour change. http://www2.warwick.ac.uk/fac/med/study/ugr/mbchb/phase1_08/semester2/healthpsychology/nice-doh_draft_review_of_health_behaviour_theories.pdf. (Accessed: 5/4/16).

Dodd, L. J., Forshaw, M. J., & Ward, T., (2012). Predicting physical activity behaviour in male and female young adults: An application of the theory of planned behaviour. *International Journal of Sport and Exercise Psychology.* (43)6, 542-555.

Donovan, K., A. (2000) Smoking cessation programmes for adolescents. *Journal school Nursing,* 16(**4**) 36-43.

Downs, D. S. & Hausenblas, H. A., (2005). Elicitation studies and the theory of planned behaviour: a systematic review of exercise beliefs. *Psychology of Sport and Exercise*. 6(1), 1-31.

Fife-Schaw, C., Sheeran, P., & Norman, P., (2007). Simulating behaviour change interventions based on the theory of planned behaviour: Impacts on intention and action. *British Journal of Social Psychology.* 46(1), 43068.

Godin, G., (1993). The theories of reasoned action and planned behaviour: overview of findings, emerging research problems and usefulness for exercise promotion. *Journal of Applied Sport Psychology*. 5(2), 141-157.

Gortmaker, S. L., Long, M. W., Resch, S. C., Ward, Z. J., Cradock, A. L., Barrett, J. L., Wright, D. R., Sonneville, K. R., Giles, C. M., Carter, R. C., Moodie, M. L., Sacks, G., Swinburn, B. A., Hsiao, A., Vine, S., Barendregt, J., Vos, T., & Wang, Y. C., (2015). Cost effectiveness of childhood obesity interventions: Evidence and methods for CHOICES. *Americal Journal of Preventive Medicine.* 49(1), 102-111.

Hadžiabdić, M., Mucalo, I., Hrabač, P., Matić, T., Rahelić, D., & Božikov, V., (2015). Factors predictive of drop-out and weight loss success in weight management of obese patients. *Journal of Human Nutrition and Dietetics.* 28, 24-32.

Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H., (2002). A meta-analytic review of the theories of reasoned action and planned behaviour in physical activity: predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*. 24(1), 3-32.

HakGweon, L., YoungHo, K., (2015). Effects of an obesity intervention integrating physical activity and psychological strategy on BMI, physical activity, and psychological variables in male obese adolescents. *Behavioral Medicine.* 41(4), 195-202.

Harrison, J. A., Mullen, P. D., & Green, L. W., (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research.* 7(1), 107-116.

Hausenblas, H. A., Carron, A. V., & Mack, D.E., (1997). Application of the theories of reasoned action and planned behaviour to exercise behaviour: A meta-analysis. *Journal of Sport & Exercise Psychology*. 19(1), 36-51.

Ho, K. S. I., Nichaman, M. Z., Taylor, W. C., Lee, E. S., & Foreyt, J. T., (1995). Binge eating disorder, retention, and dropout in an adult obesity program. *International Journal of Eating Disorders.* 18(3), 291-294.

Hollingworth, W., Hawkins, J., Lawlor, D. A., Brown, M., Marsh, T., & Kipping, R. R., (2012). Economic evaluation of lifestyle interventions to treat overweight or obesity in children. *International Journal of Obesity.* 34,(4), 559-556.

Janz, N.K., & Becker, M.H. (1984). "The Health Belief Model: A Decade Later". *Health Education Behaviour,* 11(**1**) 1-47.

Juniper, K. C., Oman, R. F., Hamm, R. M, & Kerby, D. S., (2004). The Relationships Among Constructs in the Health Belief Model and the Transtheoretical Model Among African-American College Women for Physical Activity. *American Journal of Health Promotion.* 18(5), 354-357.

Kashima, Y., & Gallois, C., (1993). The Theory of Reasoned Action and problem-focused research. In The Theory of Reasoned Action Problem-Focused Research, D. J., Terry, C. Gallois, & M. M., McCamish, eds., Pergamon, New York, 207-226.

Kasser, S. L., & Kosma, M., (2012). Health beliefs and physical activity behavior in adults with multiple sclerosis. *Disability and Health Journal.* 5(4), 261-268.

Lee, H., & Kim, Y-H., (2015). Effects of an obesity intervention integrating physical activity and psychological strategy on BMI, physical activity, and psychological variables in male obese adolescents. *Behavioural Medicine.* 41(4), 195-202.

Leyland, S. D., Van Wersch, A., & Woodhouse, D., (2014). Testing an extended theory of planned behaviour to predict intention to participate in health-related exercise during long-distance flight travel. *International Journal of Sport and Exercise Psychology.* 12(1), 34-48.

Melin, I., Reynisdottir, S., Berglund, L., Zamfir, M., & Karlstrom, B., (2006). Conservative treatment of obesity in an academic obesity unit. Long-term outcome and drop-out. *Eating and Weight Disorders.* 11(1), 22-30.

Moore, L. L., Lombardi, D. A., White, M. J., Campbell, J. L., Oliveria, S. A., & Ellison, C., (1991). Influence of parents' physical activity levels on activity levels of young children. *Journal of Pediatrics.* 118(2), 215-219.

More-life, Childhood Obesity, 2014. https://www.more-life.co.uk/Default.aspx?PageName=Childhood+Obesity. (Accessed: 29/3/16).

Morris, M. J., Beilharz, J. E., Maniam, J., Reichelt, A. C., & Westbrook, R. F., (2015). Why is obesity such a problem in the 21st century? The intersection of palatable food, cues and reward pathways, stress, and cognition. *Neuroscience and Biobehavioural Reviews.* 58, 36-45.

Morris, H., Skouteris, H., Edwards, S., & Rutherford, L., (2015). Obesity prevention interventions in early childhood education and care settings with parental involvement: A systematic review. *Early Child Development and Care.* 185(8), 1283-1313.

Naslund, J. A., Aschbrenner, K. A., Scherer, E. A., Pratt, S. I., Wolfe, R. S., & Bartels, S. J., (2016). Lifestyle intervention for people with severe obesity and serious mental illness. *Americal Journal of Preventive Medicine.* 50(2), 145-143.

National Obesity Forum, State of the nation's waistline, 2015. http://www.nationalobesityforum.org.uk/images/state%20of%20the%20nations%20waistline%202015.pdf. (Accessed: 29/3/16)

National Statistics, NHS. Statistics on obesity, physical activity and diet: England 2013. https://catalogue.ic.nhs.uk/publications/public-health/obesity/obes-phys-acti-diet-eng-2013/obes-phys-acti-diet-eng-2013-rep.pdf. (Accessed: 23/3/16)

NHS Choices, Britain 'The fat man of Europe', 2015. NHS Choices, Your Health, Your Choices. http://www.nhs.uk/Livewell/loseweight/Pages/statistics-and-causes-of-the-obesity-epidemic-in-the-UK.aspx. (Accessed: 23/3/16)

NICE, Weight management: lifestyle services for overweight or obese children and young people. Public Health Guideline. https://www.nice.org.uk/guidance/ph47/resources/weight-management-lifestyle-services-for-overweight-or-obese-children-and-young-people-1996362978757. (Accessed: 30/3/16).

Nowicka, P., & Savoye, M., (2010). Strategies that motivate children and their families to take positive action: Empowering self efficacy and change. *International Journal of Pediatric Obesity.* 5(Suppl 1.), 25-27.

O'Connell, J. K., Price, J. H., Robert, S. M., Jurs, S. G., & McKinley, R., (1985). Utilizing the Health Belief Model to predict dieting and exercising behavior of obese and nonobese adolescents. *Health Education Quarterly.* 12(4), 343-351.

Public Health England, About Obesity, 2016. https://www.noo.org.uk/NOO_about_obesity. (Accessed: 29/3/16).

Public Health England, Causes of Obesity, 2016. http://www.noo.org.uk/NOO_about_obesity/causes. (Accessed: 29/3/16).

Public Health England, Child Obesity, 2016. http://www.noo.org.uk/NOO_about_obesity/child_obesity. (Accessed:29/3/16).

Price, S., Ferisin, S., Sharifi, M., Steinberg, D., Bennett, G., Wolin, K. Y., Horan, C., Koziol, R., Marshall, R., & Taveras, E. M., (2015). Development and implementation of an interactive text messaging campaign to support behavior change in a childhood obesity randomized controlled trial. *Journal of Health Communication.* 20(7), 843-850.

Raaijmakers, L. C. H., Pouwels, S., Berghuis, K. A., & Nienhuijs, S., W., (2015). Technology-based interventions in the treatment of overweight and obesity: A systematic review. *Appetite.* 95, 138-151.

Rosenstock, I.M., Strecher, V.J., & Becker, M.H. (1988). "Social learning theory and the health belief model". *Health Education & Behaviour,* 15(**2**), 175–183. doi: 10.1177/109019818801500203

Sheeran, P., Trafimow, D., & Armitage, C. J., (2003). Predicting behaviour from perceived behavioural control: Tests of the accuracy assumption of the theory of planned behaviour. *British Journal of Social Psychology.* 42(3), 393-410.

Werthmann, J., Jansen, A., Nederkoorn, C., Schyns, G., & Roefs, A., (2015). Food through the child's eye: An eye-tracking study on attentional bias for food in healthy-weight children and children with obesity. *Health Psychology.* 34(12), 1123-1132.

Whitford, H. M., & Jones, M., (2011). An exploration of the motivation of pregnant women to perform pelvic floor exercises using the revised theory of planned behaviour. *British Journal of Health Psychology.* 16(4), 761-778.

Yavuz, H. M., van Ijzendoorn, M. H., Mesman, J., van der Veek, S., (2015). Interventions aimed at reducing obesity in early childhood: A meta-analysis of programs that involve parents. *Journal of Child Psychology and Psychiatry.* 56(6), 677-692.

Zimmerman, R.S. and Vernberg, D. (1994) Models of preventive health behavior: comparison, critique and meta-analysis. In Albrecht, G. (ed.), Advances in Medical Sociology, Health Behavior Models: A Reformulation. JAI Press, Greenwich, CT, vol. 4, pp. 45–67.

Appendix 1

Evaluation Forms

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   - a. Excited
   - b. Nervous/worried
   - c. Calm
   - d. (Unsure)

2. **How did you feel at this stage in the programme? (Please circle)**
   - a. Excited
   - b. (Nervous/worried)
   - c. Calm
   - d. Unsure

3. **Which sessions did you enjoy the most and why?**

   About the calories and how important it is for breakfast.

4. **Which sessions did you enjoy the least and why/any further comments?**

   The one about things you are supposed to eat like fruit veg. because it repeats it repeats what we already know.

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   - ☐ Yes
   - ☑ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   - ☐ Yes
   - ☑ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   - ☑ Yes
   - ☐ No

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. (Calm)
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**
   a. (Excited)
   b. (Nervous/worried)
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   I liked sessions 4 because I learnd alot.

4. **Which sessions did you enjoy the least and why/any further comments?**

   I didn't engag session because I didn't know many anyone.

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☑ Yes
   ☐ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

steps to a healthier you

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)
   a. Excited *(circled)*
   b. Nervous/worried
   c. Calm
   d. Unsure

2. How did you feel at this stage in the programme? (Please circle)
   a. Excited
   b. Nervous/worried
   c. Calm *(circled)*
   d. Unsure

3. Which sessions did you enjoy the most and why?

   Breakfast because I have got a lot of information

4. Which sessions did you enjoy the least and why/any further comments?

5. Did the workshop goals help you make more healthy choices for you and your family?
   ☑ Yes
   ☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?
   ☑ Yes
   ☐ No

   If yes, what changes have they made?

   all my family now eat healthy food

7. Do you enjoy the activity sessions?
   ☑ Yes
   ☐ No

Steps to a healthier you?   Parent

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited *(circled)*
   b. Nervous/worried
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. Calm *(circled)*
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   We only have been to 2. But
   and enjoyed the 1st session actively
   (breakfast)

4. **Which sessions did you enjoy the least and why/any further comments?**

   Enjoyed both could include more
   goals to achieve during the week
   and something to mention for
   kids goals

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☑ Yes
   ☐ No

   If yes, what changes have they made?
   More exercise cut back on portion size.
   and snacky foods.

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)

a. Excited
b. Nervous/worried
c. (Calm)
d. Unsure

2. How did you feel at this stage in the programme? (Please circle)

a. Excited
b. Nervous/worried
c. (Calm)
d. Unsure

3. Which sessions did you enjoy the most and why?

Breakfast because I learn a bit of information

4. Which sessions did you enjoy the least and why/any further comments?

no one

5. Did the workshop goals help you make more healthy choices for you and your family?

☑ Yes
☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?

☑ Yes
☐ No

If yes, what changes have they made?

the diet and exciside

7. Do you enjoy the activity sessions?

☑ Yes
☐ No

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme?** (Please circle)
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme?** (Please circle)
   a. Excited
   b. Nervous/worried
   c. (Calm)
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   Session 4 because I learnt alot and I have tride really well to do the things I head coart

4. **Which sessions did you enjoy the least and why/any further comments?**

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   - Yes ☑
   - No ☐

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   - Yes ☐
   - No ☐

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   - Yes ☑
   - No ☐

Mason
2016

Steps to a healthier you

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)

   a. Excited
   b. (Nervous/worried)
   c. Calm
   d. Unsure

2. How did you feel at this stage in the programme? (Please circle)

   a. Excited
   b. Nervous/worried
   c. (Calm)
   d. Unsure

3. Which sessions did you enjoy the most and why?

   The ~~first~~ Second session because
   we did lots of physical act-
   ivity.

4. Which sessions did you enjoy the least and why/any further comments?

   The first because it was
   boring.

5. Did the workshop goals help you make more healthy choices for you and your family?

   ☑ Yes
   ☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?

   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. Do you enjoy the activity sessions?

   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited ⃝
   b. Nervous/worried
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**
   a. Excited ⃝
   b. Nervous/worried
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   Games

4. **Which sessions did you enjoy the least and why/any further comments?**

   talking sessions

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☑ Yes
   ☐ No

   If yes, what changes have they made?

   More activities

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

4. **Which sessions did you enjoy the least and why/any further comments?**

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☑ Yes
   ☐ No

   If yes, what changes have they made? no chocolate appart of Sunday

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

LIVE WELL LUTON FEEDBACK FORM – ~~Children aged 8+~~

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)

    a. Excited
    b. Nervous/worried
    c. Calm *(circled)*
    d. Unsure

2. How did you feel at this stage in the programme? (Please circle)

    a. Excited
    b. Nervous/worried
    c. Calm
    d. Unsure *(circled)*

3. Which sessions did you enjoy the most and why?

> Every Session. Because we feel so much fun

4. Which sessions did you enjoy the least and why/any further comments?

> Every session is ok

5. Did the workshop goals help you make more healthy choices for you and your family?

    ☑ Yes
    ☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?

    ☐ Yes
    ☑ No

If yes, what changes have they made?

7. Do you enjoy the activity sessions?

    ☑ Yes
    ☐ No

PLEASE TURN OVER TO COMPLETE

March 2016

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**

   a. Excited
   b. Nervous/worried
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**

   a. Excited
   b. Nervous/worried
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   acame today because we played games

4. **Which sessions did you enjoy the least and why/any further comments?**

   the first

5. **Did the workshop goals help you make more healthy choices for you and your family?**

   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**

   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**

   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

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LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. Calm
   d. (Unsure)

2. **How did you feel at this stage in the programme? (Please circle)**
   a. Excited
   b. (Nervous/worried)
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   About the calories and how important it is for breakfast.

4. **Which sessions did you enjoy the least and why/any further comments?**

   The one about things you are supposed to eat like fruit veg. because it repeats what we already know.

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☐ Yes
   ☑ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. Too Much
   b. (Not enough)
   c. About right

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident
   b. (A little confident)
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation			✓		
2	EatWell Plate					✓
3	Physical activity sessions	✓				
4	Portion Sizes				✓	
5	Parent time		✓			

11. Would you recommend the Live Well Luton programme to other friends and families?
   ☑ Yes
   ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   ~~5~~   6   (7)   8   9   10

(very poor)   Ok-Average)   (Excellent)

8. **How do you feel about the amount of activity sessions included in the programme?**
   (please circle)
   a. Too Much
   b. (Not enough)
   c. About right

9. **Do you feel more confident exercising as a family after taking part in the activity sessions?**
   a. Very confident
   b. A little confident
   c. (Unsure)
   d. Not confident

10. **Please fill out the table below**

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions	✓				
4	Portion Sizes	✓				
5	Parent time	✗				

11. **Would you recommend the Live Well Luton programme to other friends and families?**
   ☑ Yes
   ☐ No

12. **Overall how would you rate the Live Well Luton Child Weight Management programme?**

   1   2   3   4   5   6   7   8   9   (10)

(very poor)   Ok-Average)   (Excellent)

8. **How do you feel about the amount of activity sessions included in the programme?**
(please circle)
   a. Too Much
   b. Not enough
   c. About right *(circled)*

9. **Do you feel more confident exercising as a family after taking part in the activity sessions?**
   a. Very confident *(circled)*
   b. A little confident
   c. Unsure
   d. Not confident

10. **Please fill out the table below**

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate		✓			
3	Physical activity sessions	✓				
4	Portion Sizes	✓				
5	Parent time		✓			

11. **Would you recommend the Live Well Luton programme to other friends and families?**
   ☑ Yes
   ☐ No

12. **Overall how would you rate the Live Well Luton Child Weight Management programme?**

   1   2   3   4   5   6   7   (8)   9   10

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. Too Much
   b. Not enough
   c. (About right)

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. (Very confident)
   b. A little confident
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	**Good**	**Average**	**Poor**	**Very Poor**
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions	✓				
4	Portion Sizes	✓				
5	Parent time	✓				

11. Would you recommend the Live Well Luton programme to other friends and families?
   ☑ Yes
   ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

   1   2   3   4   5   6   7   8   9   (10)

(very poor)   Ok-Average)   (Excellent)

Live Well Luton
Steps to a healthier you

8. **How do you feel about the amount of activity sessions included in the programme?**
   (please circle)
   a. Too Much
   b. (Not enough)
   c. About right

9. **Do you feel more confident exercising as a family after taking part in the activity sessions?**
   a. Very confident
   b. (A little confident)
   c. Unsure
   d. Not confident

10. **Please fill out the table below**

Week	Topic	Please tick				
		Excellent	**Good**	**Average**	**Poor**	**Very Poor**
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions	✓				
4	Portion Sizes	✓				
5	Parent time					

11. **Would you recommend the Live Well Luton programme to other friends and families?**
   ☑ Yes
   ☐ No

12. **Overall how would you rate the Live Well Luton Child Weight Management programme?**

   1   2   3   4   5   6   7   8   9   (10) ✗

   (very poor)   Ok-Average)   (Excellent)

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   - a. Too Much
   - b. (Not enough)
   - c. About right

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   - a. Very confident
   - b. A little confident
   - c. (Unsure)
   - d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation			✓		
2	EatWell Plate			✓		
3	Physical activity sessions		✓			
4	Portion Sizes			✓		
5	Parent time	✓				

11. Would you recommend the Live Well Luton programme to other friends and families?
   - ☑ Yes
   - ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   6   7   8   (9)   10

    (very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme?
   (please circle)
   a. Too Much
   b. Not enough
   c. (About right)

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident
   b. A little confident
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions	✓				
4	Portion Sizes	✓				
5	Parent time	✓				

11. Would you recommend the Live Well Luton programme to other friends and families?
    ☑ Yes
    ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   6   7   8   9   (10)

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. Too Much
   b. Not enough
   c. About right *(circled)*

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident
   b. A little confident *(circled)*
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation		✓			
2	EatWell Plate			✓		
3	Physical activity sessions		✓			
4	Portion Sizes			✓		
5	Parent time			✓		

11. Would you recommend the Live Well Luton programme to other friends and families?
    ☑ Yes
    ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   6   7   (8)   9   10

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. (Too Much)
   b. Not enough
   c. (About right)

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. (Very confident)
   b. A little confident
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions		✓			
4	Portion Sizes					
5	Parent time	✓				

11. Would you recommend the Live Well Luton programme to other friends and families?
   ✓ Yes
   ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

   1   2   3   4   5   6   7   8   9   10

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme?
   (please circle)
   a. Too Much
   b. Not enough ∧
   c. About right ✓

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident ✓
   b. A little confident
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation		✓			
2	EatWell Plate		✓			
3	Physical activity sessions	✓				
4	Portion Sizes		✓			
5	Parent time		✓			

11. Would you recommend the Live Well Luton programme to other friends and families?
    ☑ Yes
    ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   6   7   8   ⑨   10

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme?
   (please circle)
   a. Too Much
   b. Not enough *(circled)*
   c. About right

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident *(circled)*
   b. A little confident
   c. Unsure
   d. Not confident

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation		✓			
2	EatWell Plate		✓			
3	Physical activity sessions		✓			
4	Portion Sizes		✓			
5	Parent time		✓			

11. Would you recommend the Live Well Luton programme to other friends and families?
    ☑ Yes
    ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   ⑥   7   8   9   10

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. Too Much
   b. Not enough
   c. (About right)

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident
   b. A little confident
   c. Unsure
   d. (Not confident)

10. Please fill out the table below

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate			✓		
3	Physical activity sessions	✓				
4	Portion Sizes			✓		
5	Parent time		✓			

11. Would you recommend the Live Well Luton programme to other friends and families?
   ☑ Yes
   ☐ No

12. Overall how would you rate the Live Well Luton Child Weight Management programme?

    1   2   3   4   5   6   (7)   8   9   10

(very poor)   Ok-Average)   (Excellent)

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited
   b. (Nervous/worried)
   c. Calm
   d. Unsure

2. **How did you feel at this stage in the programme? (Please circle)**
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   The activity sessions ~~been~~ because I love doing sports Games

4. **Which sessions did you enjoy the least and why/any further comments?**

   The imformation session because it is long and boring you need to make it more fun

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☐ Yes
   ☐ No   that I know of most of

   Not my family live in london

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

   PLEASE TURN OVER TO COMPLETE

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. Calm
   d. (Unsure)

2. **How did you feel at this stage in the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. (Calm)
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   All of them

4. **Which sessions did you enjoy the least and why/any further comments?**

   None.

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

   PLEASE TURN OVER TO COMPLETE

6a manor
febuary 2016

![Live Well Luton logo] Steps to a healthier you

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. **How did you feel about starting the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. ~~Calm~~ (circled)
   d. Unsure (circled)

2. **How did you feel at this stage in the programme? (Please circle)**
   a. Excited
   b. Nervous/worried
   c. Calm (circled)
   d. Unsure

3. **Which sessions did you enjoy the most and why?**

   cVJcKet LOL

4. **Which sessions did you enjoy the least and why/any further comments?**

   non LOL

5. **Did the workshop goals help you make more healthy choices for you and your family?**
   ☑ Yes
   ☐ No

6. **Have any other members of your family made changes to their diet and physical activity levels after attending the programme?**
   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. **Do you enjoy the activity sessions?**
   ☑ Yes
   ☐ No

PLEASE TURN OVER TO COMPLETE

Live Well Luton
Steps to a healthier you

lea manor
February 2016

LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)
   a. **Excited** (circled)
   b. Nervous/worried
   c. Calm
   d. Unsure

2. How did you feel at this stage in the programme? (Please circle)
   a. Excited
   b. Nervous/worried
   c. **Calm** (circled)
   d. Unsure

3. Which sessions did you enjoy the most and why?

   dodge bell, I like playing outdoor games

4. Which sessions did you enjoy the least and why/any further comments?

   N/A

5. Did the workshop goals help you make more healthy choices for you and your family?
   ☐ **Yes** (circled)
   ☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?
   ☐ **Yes** (circled)
   ☐ No

   If yes, what changes have they made?

   they ete different foods

7. Do you enjoy the activity sessions?
   ☐ **Yes** (circled)
   ☐ No

   PLEASE TURN OVER TO COMPLETE

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LIVE WELL LUTON FEEDBACK FORM – Children aged 8+

(All comments are anonymous and confidential)

1. How did you feel about starting the programme? (Please circle)
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

2. How did you feel at this stage in the programme? (Please circle)
   a. (Excited)
   b. Nervous/worried
   c. Calm
   d. Unsure

3. Which sessions did you enjoy the most and why?

   I liked the session where we got to taste bread because I didn't know how nice. brown bread tasted without anything on it.

4. Which sessions did you enjoy the least and why/any further comments?

   Not sure.

5. Did the workshop goals help you make more healthy choices for you and your family?
   ☑ Yes
   ☐ No

6. Have any other members of your family made changes to their diet and physical activity levels after attending the programme?
   ☐ Yes
   ☑ No

   If yes, what changes have they made?

7. Do you enjoy the activity sessions?
   ☑ Yes
   ☐ No

   PLEASE TURN OVER TO COMPLETE

8. Do you feel more confident exercising as a family after taking part in the activity sessions?

    a. (Very confident)
    b. A little confident
    c. Unsure
    d. Not confident

9. Did the workshop goals help you make more healthy choices for your family?

    ☐ (Yes)
    ☐ No

If yes, what lifestyle changes have you made?

10. How would you rate the workshops Leader for the following out of 10:

    Approachable   10/10
    Knowledgeable   10/10
    Helpful   10/10
    Organised   10/10

11. How would you rate the Physical Activity Leader for the following out of 10:

    Approachable   10/10
    Knowledgeable   10/10
    Helpful   10/10
    Organised   10/10

12. How motivated are you on a scale of 1-10 on sticking with your lifestyle changes for the future?

    1 2 3 4 5 6 7 8 (9) 10

13. Would you recommend the Live Well Luton programme to other families?

    ☑ Yes
    ☐ No

14. Overall how would you rate the service?

    1   2   3   4   5   6   7   8   9   (10)

(very poor)   Ok-Average)   (Excellent)

8. How do you feel about the amount of activity sessions included in the programme? (please circle)
   a. Too Much
   b. Not enough
   c. About right

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
   a. Very confident
   b. A little confident
   c. Unsure
   d. Not confident

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation		✓			
2	EatWell Plate		✓			
3	Physical activity sessions	✓				
4	Portion Sizes	✓	✓			
5	Parent time	✓				

10. Would you recommend the Live Well Luton programme to other friends and families?
   ☑ Yes
   ☐ No

11. Overall how would you rate the Live Well Luton Child Weight Management programme?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

(very poor)   Ok-Average)   (Excellent)

8. **How do you feel about the amount of activity sessions included in the programme?**
(please circle)
   a. Too Much
   b. (Not enough)
   c. About right

9. **Do you feel more confident exercising as a family after taking part in the activity sessions?**
   a. Very confident
   b. (A little confident)
   c. Unsure
   d. Not confident

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate					
3	Physical activity sessions					
4	Portion Sizes					
5	Parent time					

10. **Would you recommend the Live Well Luton programme to other friends and families?**
   ☑ Yes
   ☐ No

11. **Overall how would you rate the Live Well Luton Child Weight Management programme?**

1   2   3   4   5   6   7   8   9   (10)

(very poor)   Ok-Average)   (Excellent)

Steps to a healthier you

8. How do you feel about the amount of activity sessions included in the programme?
    (please circle)
    a. Too Much
    b. (Not enough) it should Just be activity session
    c. About right

9. Do you feel more confident exercising as a family after taking part in the activity sessions?
    a. (Very confident)
    b. A little confident
    c. Unsure
    d. Not confident

Week	Topic	Please tick				
		Excellent	Good	Average	Poor	Very Poor
1	Consultation	✓				
2	EatWell Plate	✓				
3	Physical activity sessions			✓		
4	Portion Sizes	✓				
5	Parent time		✓			

10. Would you recommend the Live Well Luton programme to other friends and families?
    ☐ Yes
    ☐ No

11. Overall how would you rate the Live Well Luton Child Weight Management programme?

        1   2   3   4   5   6   7   8   9   10

(very poor)   Ok-Average)   (Excellent)

Appendix 2

Physical Activity Session Plans

Activity Lesson Plan 1

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session: Venue: Age range: Abilities:

WEEK ONE

Activity Lead: Activity Assistant:

Aim of Warm Up:

Get the families familiar with each other, and do some ice breakers whilst preparing the body for physical activity

Equipment: Balls

Time: 0-5mins

Ice breaker:

Time Bomb- Ice breaker where the families will learn each other's names, and some interesting stuff about each other.

The group will pass the ball around the circle firstly as they catch the ball they must shout out:

1. Name
2. Something interesting about themselves.
3. Something funny they have done before.

After this has been done the group will then shout another child's name before they throw them the ball and then something interesting/funny about them. If the ball is dropped countdown from 10-1 starts and the person with the ball on 1 misses one round.

Key learning Points: focus on learning about each other

Differentiation:

Introduce more balls.

Warm up:

Stuck in the mud- Explain rules of appropriate touching etc.

Stuck in the mud is a classic game and is a great pulse raiser for any age.

1 or more people are 'on' (that is depending on the size of the class). They must chase the people that are not 'on' and tag them. When children that aren't 'on' get tagged them must stand with legs and arms out and can only be released if another child frees them by going under their arm.

Equipment: Balls

Time: 5-10mins

Key learning Points: Pulse Raiser.

Introduce new rules/ get children to think of safe new rules to develop the game.

1. Introduce a ball (like dodgeball they are tagged with a suitable ball shot).
2. Tagging others with the balls (suitable places)
3. Last man standing.

Use initiative to create more safe rules.

Differentiation:

Balls

New rules

More people on

Aim of Activity: Team races

Equipment:

Time: 10-25mins

Main activity:

Team nutrition races

Split the group up into equal teams they can all name their teams. Using different methods of travel (running, skipping, hopping etc.) the teams will race, however there's a twist. There will be a picture of a stomach and a picture of a bin (you could also just use two hoops) separate at each teams side. In true relay style the youngsters will take it in turns to relay but run to the correct side. The leader will hold up an item of food and as they do the runner will decide if its stomach or bin and run there, touch it and return to team. This will continue, but leader needs to be prompt with the foods.

Key learning Points:

The youngsters will have to react quickly and use nutritional knowledge. The team must also work as a team.

Differentiation:

Ask the children on how they can make it more interesting and let them introduce a safe rule.

Aim of Cool Down: bring heart rate back down and a bit of team building problem solving.

Equipment: NA

Time: 25-30mins

Cool Down:

Walk slowly around the hall

Stretches – hamstring, calf, quads

Activity Lesson Plan 2

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session:	Venue:	Age range:	Abilities:

WEEK TWO

Activity Lead: Activity Assistant:

Aim of Warm Up:	Equipment: cones, food pictures, eat well corner signs
Warm up: Have a QUICK 2minutes to go through sections of the plate.	
The Eat well plate corner game-	Time: 0-5mins
The food groups from the Eat well plate will be stuck on corners (dairy, protein, etc.) of the hall and evenly spread out. The children will be asked to run around the hall safely, the leader must then shout out a food item and children should sprint to the correct food group, and yes, it's a race.	Key learning Points: Learn about food groups in the Eat well plate and what foods fall into that category.
Aim of Activity: Get sweaty	Equipment: ball, cones and basketball net (can play without it)
Main activity: kick rounder's	Time:
Split the group into two teams and set out the cones like rounder's bases. The kicking team will be in a line first person kicks the ball and the whole team runs around and scores a point every time they ALL complete a full circuit. They should continue to run around until the opposing team schools a goal in the basketball hoop. Have a time cap for each team to score as many points as they can and then same again for team 2. You can choose to either keep changing round or have longer time caps.	Key learning Points:
	Differentiation:

Aim of Cool Down:

Cool Down:

Walk slowly around the room

Stretches: hamstrings, quads, calf

Equipment: n/a

Time: 25-30mins

Key learning Points:

Differentiation:

Activity Lesson Plan 3

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session: Venue: Age range: 5 - 9   Abilities:

Session Wk No: 3

Activity Lead: Activity Assistant:

Aim of Warm Up: To increase heart rate, flexibility and prepare mind and body for main activity.

Equipment: none

Time: 5mins

Warm up: **Sporting stars-**

Children start walking around in the activity area. Activity lead to call out sporting star names or name of a sport and the children will act out the sport while moving. Start to increase the pace of the children as the warm up continues.

Key learning Points: understand why warm up is important.

Differentiation:

e.g: football – act out kicking a ball or jumping for a header, saving a shot.

Aim of Activity: For the children to work in teams and decide best tactics to decrease their equipment in their areas (portion Sizes)

Equipment: soft/safe equipment that can be carried by an individual.

Main activity: Set out 4 areas (dependent on numbers) in corners of your working area. In the middle of the area add a mixture of equipment. Separate the group and allocate the children to different corners. On the activity leads call one child from each child would run to the centre and collect one piece of equipment and take back to their corner. Once all the

Time: 15-20mins

equipment has gone get the children to add up how many pieces of equipment they have.

Next stage is to get one child at a time to take one piece of equipment from there corner to another team's corner. The idea is after a set time you are reducing your numbers of equipment. (reduce portion sizes)

Progression:

Use colours as 2 pieces of equipment. Yellow objects are worth 2 e.g.

Aim of Cool Down: To reduce heart rate and prevent blood pooling.

Equipment: pack equipment away that was used in last activity

Cool Down: Once the game is complete get the children to walk each piece of equipment they have back to the centre. Once this is all complete allow them to slowly walk around the room. To cool down

Time: 5 mins

Stretches

Key learning Points:

Understanding why it is important to cool down.

Differentiation:

Activity Lesson Plan 4

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session: Venue: Age range: Abilities:

Session Wk No: 4

Session Topic:
Breakfast and regular
meals

Activity Lead: Activity Assistant:

Equipment:

Warm up: In a cereal bowl-

Time:

Get the children to imagine they are in a cereal bowl. Get them to swim
around in the milk. Pretend to use various swimming styles. If it is a high
sugary cereal get them to swim quickly for short bursts of time then slow
them down. If they are in a bowl of porridge get them to make large slow
movement but for longer periods of times.

Key learning Points:

Differentiation:

Aim of Activity: To understand regular meals and the importance of
them.

Equipment:

Time:

Main activity: set at an area with 3 zones in. Area should be large enough
for the group to move around in. First zone should have cones spread
around randomly, these are mines, 2nd zone will have 2 players in, 3rd
zone will be an obstacle course. Split the group up into 2 teams. Have a
set of cards that have had a healthy meal and skipped a meal. Have the
first person from each group choose a card. If they choose to skip a meal
they have a limited time to get through the course i.e. 30secs. If they
choose had a healthy meal they have longer to get through the course i.e.
1min.

Key learning Points:

Differentiation:

Children have a choice how to get through the course with a piece of equipment, basketball dribbling it, hockey stick and ball, football, etc.

Course rules; if they hit a cone with either themselves or the sport equipment they should go back. The players in the middle must defend their area by force the players to go wide and not get to the other end. No tackling. The 3rd section they must go through the obstacle course.

Progression: If they choose to skip a meal you could get them to use less dominate hand.

Equipment:

Time:

Cool Down: Slowly walk around the hall

Stretches!

Key learning Points:

Differentiation:

Activity Lesson Plan 5

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session:	Venue:	Age range:	Abilities:
Week 5		5-9 years	
Activity Lead:		Activity Assistant:	

Aim of Warm Up: To increase heart rate, flexibility and prepare mind and body for main activity.	Equipment: 1 Red Ball 1 Blue Ball
Warm up: Sun and Ice- One child is given the blue ball and will be the ice and another child is given the red ball and will be the sun.	Time: 5 minutes
The child with the blue ball (ice) must freeze as many people as possible by touching them with the ball (the ball must stay in the child's hands) whilst the child with the red ball (sun) is releases them.	Key learning Points: Understand why it is important to warm the body up
Progression: Child who is the Ice can throw the ball to freeze people	Differentiation:
Aim of Activity: Working together as a team to get as many points as possible and thinking creatively.	Equipment: Hoops (1 per family) Balls, cones, bibs, skipping ropes
Main activity: Treasure hunt- All the children have a treasure chest (1 hoop) in a corner of the room the aim of the game is to fill this chest. In the centre of the room is the treasure (contents of the kit bag) the families must take it in turns to run to the treasure chest to collect 1 piece of treasure and run back to tag their team mate and place the treasure in their hoop.	Time: 10-20minutes
After all the treasure in the middle of the room is gone all the children will need to count what they have collected (1 point for each piece).	Key learning Points: To work together as a team

2nd Round: This time they can steal each other's treasure. One at a time the children run to another team's chest to take 1 piece and run back. Their partner cannot protect their treasure chest but must wait for their turn to run and collect a piece of treasure. Allow this to happen for 2-3minutes.

Differentiation:

3rd Round: After this round try the other variations:

- Each team can make up a rule i.e. the other team should hop
- Double points for certain pieces of treasure

Aim of Cool Down: To decrease heart rate, cool down the muscles and prevent lactic acid build up whilst winding down.

Equipment: 1 ball

Time: 5minutes

Cool Down: Time Bomb-

Key learning Points:

All the children stand in a circle passing a ball around to whoever they like once the ball hits the ground (children can decide to bounce it or if

The importance of cooling down after a warm up.

someone drops it) everyone counts down from 10 still passing the ball round. When 1 is shouted out whoever has the ball is out, continue until two children are left who will then pass the ball between them counting down from 10 until 1. Whoever has the ball on one is out and the other child is the winner.

Differentiation:

Increase the number of balls

Stretches

Activity Lesson Plan 6

Reminders:-

- Does everyone remember all the points on the code of conduct/ground rules?
- Does everyone feel well and able to participate today?
- Has everyone eaten regular meals and drunk some water today?
- If anyone needs to let us know about any of these please tell…….. now.

Date of session: Venue: Age range: Abilities:

Week 6   5-9 years

Activity Lead: Activity Assistant:

Aim of Warm Up: To increase heart rate, flexibility and prepare mind and body for main activity.

Equipment:

Time: 5 minutes

Warm up: Monsters Inc

Children begin by walking around the room and gradually increasing to a light jog. During this time, the instructor will shout out instructions, Scary feet, bunk bed scare, the kids awake, monster walk and monster run.

Key learning Points:

Understand why it is important to warm the body up

Scary feet- jogging on the spot as quickly as possible

Bunk bed scare-On tip toes, arms up, fingers clawed roar as loud as they can then bend at the knees and repeat. Children go from one to the other as quickly as possible.

Differentiation:

The kids awake-Children lie down as quickly as possibly

Monster walk-take big strides

Monster run- run as quickly as possible

Progression:

- Speed up the instructions called out

Aim of Activity: Working together as a team to get as many points as possible and thinking creatively.

Equipment: Benches for each team, cones, balls, skipping ropes etc.

Main activity: Snack Relay Races

Split the group into teams behind the starting cone and set up different stations i.e.

Time: 10-15minutes

Station 1-set out three cones with a ball on each cone with a cone opposite. The child must move the ball from one cone to the next

Key learning Points:

Healthy VS unhealthy snacks

Station 2- Using a bench the children must walk across without falling off.

Differentiation:

Station 3- Star jumps

Station 4-Skipping

Final station-At the end of the relay is a set of snacks face down. The children must select a snack, run back to their team and turn over the snack if it is a healthy snack the next team member can run and get another snack however if the snack is unhealthy the whole team must complete the agreed exercise i.e. star jumps, jogging on the spot or air boxing and then the next team mate can run.

Progression:

- Change the stations
- Add a time limit

Team that finishes the relay 1st wins.

Progression:

- Change the exercise at each station

- Increase the number of stations

Aim of Cool Down: To decrease heart rate, cool down the muscles and prevent lactic acid build up whilst winding down.

Equipment: 1 ball

Time: 5-10minutes

Cool Down: Head it Catch it

Key learning Points:

With everyone in a circle and the physical activity lead in the middle the leader must pass the ball round to each child with a command "head it" or "catch it". The catch is that the child must do the opposite of what the

Co-ordination

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leader says i.e. if the leader says, "catch it" the child must head it and likewise if the leader says, "head it" the child must catch it.

Differentiation:

SECTION C3

EMPIRICAL RESEARCH PROJECT

The effect of smoking cessation aids on smoking cessation weight gain

Contents

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The effect of smoking cessation aids on smoking cessation weight gain

Abstract

A fear of gaining weight is a barrier for people to stop smoking. It is common to gain weight when stopping smoking and although some products have been found to be somewhat effective at preventing weight gain, research into the use of e-cigarettes and weight change for smoking cessation is limited. It is also important to look at other factors that may affect smoking cessation weight changes, such as eating habits, physical activity levels and gender to increase the number of individuals stopping smoking. Using an independent group, repeated measures mixed design, 66 participants were recruited through a Stop Smoking service during their smoking cessation attempt with 21 participants in the NRT group, 22 in the E-cigarette group and 23 in the Champix group. Participants were administered a self-designed instrument to ask background information and note their height, weight, waist circumference and chosen smoking cessation aid. Participants were also given the Fagerstrohm Test for Nicotine Dependence (FTND), Adult Eating Behaviour Questionnaire (AEBQ), Emotional Eating Questionnaire (EMAQ) and Global Physical Activity Questionnaire (GPAQ). There was a repeated measure variable for the study in which they were given the questionnaires at baseline, 4 weeks, 12 weeks and 6 months of their smoking cessation programme. Weight, waist circumference and BMI increased for all smoking cessation aids over the 6-month period. Weight, waist circumference and BMI increased more in women than men with the main significant predictors of BMI in women being e-cigarettes and eating behaviours. Finally, there were no significant effects of ethnicity on weight changes in smoking cessation. The study showed that all individuals gained some weight throughout the smoking cessation process regardless of smoking cessation aid and that the most important factor relating to weight change was gender. It was found that women are more likely to gain weight during smoking cessation and this is thought to be due to their susceptibility to emotional eating and changes in eating behaviours. Therefore, to progress research in smoking cessation and prevent weight gain, further research should look at reducing emotional eating and changes in eating behaviours in women during smoking cessation. To strengthen future studies into weight changes during smoking cessation using e-cigarettes there should be an increase in the number of female participants. It would be a major public concern if people continue to smoke due to concerns about weight gain as it has been shown that the effects of smoking considerably outweigh the effects of gaining weight.

Introduction

Smoking is defined as 'the action or habit of inhaling and exhaling the smoke of tobacco or a drug', (Oxford Dictionary of English, 2015). 'Tobacco smoking is the practice of burning tobacco which is encased in cigarettes or pipes and inhaling the smoke', (The Free Dictionary, 2016). Tobacco comes from the leaves of the tobacco plant and contains thousands of different chemicals, one of these chemicals is nicotine and is highly addictive, (FRANK, 2016). Smoking is now considered to not only be a physical addiction to tobacco products but a habitual, psychological addiction, which can have severe health consequences, (The Free Dictionary, 2016).

There are found to be over 4000 chemicals in each cigarette and over 70 of these chemicals have been found to cause cancer with most of the others considered poisonous, (BLF, 2016). People will often continue to smoke due to the addiction to Nicotine, however, it is the Tar and Carbon Monoxide which causes the health risks, (BLF, 2016). Tar is a mixture of the compounds in cigarette smoke, which condense (turn from a gas to a thick liquid) once in the lungs to form a sticky brown substance, (Centers for Disease Control and Prevention, US, 2010). Carbon Monoxide is a poisonous gas that comes from things that burn incompletely and it attaches to the red blood cells quicker than oxygen, (NHS Choices, 2016). Therefore, the more Carbon Monoxide in the body, the less Oxygen available in the blood, (NHS Choices, 2016). Smoking is the biggest cause of early and unavoidable death in the UK, (BLF, 2016). On average, smokers live 10 years less than non-smokers, (BLF,2016) and 1 in 2 smokers will die from a smoking related disease, (NHS SmokeFree, 2016).

There are about 10 million adults who smoke cigarettes in the UK, which is about a sixth of the total UK population, (ASH, 2015). 22% of adult men and 17% of adult women are smokers, (Ash 2015). As cigarette smoke enters the bloodstream, which flows around the body, the health risks can be associated with any part of the body, (NHS SmokeFree, 2016). The most commonly known risks are the effects to the heart, lungs and brain and these are caused by different parts of smoking, (NHS Smoke Free, 2016). Carbon monoxide and Nicotine increase your blood pressure and heart rate, which as a result, puts a strain on the heart by making it work harder, (NHS SmokeFree, 2016). Tar enters the body and makes the blood thicker, which increases the chances of clots and increases the risk of heart attack and stroke, (NHS Smoke Free, 2016). Coughs, wheezing and asthma are common problems that

smokers may experience, and smoking can cause fatal diseases such as pneumonia, emphysema and lung cancer, (NHS Smoke Free, 2016). COPD (chronic obstructive pulmonary disease) is a progressive and debilitating disease and it is an encompassing term for lung diseases, such as chronic bronchitis and emphysema. The main symptoms of these conditions are difficulties with breathing due to the narrowing of the airways and destruction of lung tissue, (NHS Smoke Free, 2016).

Every year, over 100,000 smokers in the UK die from smoking related causes, (ASH, 2015). Smoking accounts for over one-third of respiratory deaths, over one-quarter of cancer deaths and about one-seventh of cardiovascular disease deaths, (ASH, 2015). Two-thirds of smokers start before age 18 and of those who try smoking, between one-third and one-half will become regular smokers, (ASH, 2015). Smoking is the primary cause of preventable illness and death in the UK and smokers under the age of 40 have a five times greater risk of a heart attack than non-smokers, (ASH, 2015). Smoking can cause cancer in many parts of the body, including; stomach, throat, mouth, bladder, liver and is the main cause of 90% of cases of lung cancer, (NHS Choices, 2015; Freund et al, 1993). Women who smoke are also at a higher risk of developing osteoporosis than non-smokers and are more likely to go through the Menopause up to 2 years earlier, (ASH, 2016; Roth & Taylor, 2001). Men who smoke may experience a reduction in sperm count, increased sperm abnormalities and has also been known to cause impotence, (ASH, 2016). Smokers experience a lack of oxygen in the body and this can lead to wrinkles in the facial area at a younger age than non-smokers, (ASH, 2016). Teenagers who take up smoking are more likely to experience symptoms of asthma and respiratory problems, suffer poorer health, have more school absences and are less fit compared with non-smokers of the same age, (ASH, 2016) but they are also found to be unaware of these health risks, (Murphy-Hoefer et al, 2004).

Another important reason for people to stop smoking is to reduce the risks to others due to passive smoking, (NHS Choices, 2015). Most of the cigarette smoke goes up into the atmosphere, can't be seen or smelt allowing it to be inhaled passively by someone else, (NHS choices, 2015). Second hand smoke, which is the process of breathing in other people's smoke, also called passive smoking, can cause cancer as it still contains all the poisonous toxins from cigarettes, (Cancer Research UK, 2016). Passive smoking is the cause of thousands of people dying each year in the UK from; lung cancer (where the risk is increased by a quarter), heart disease, stroke and COPD, (Cancer Research UK, 2016). Passive smoking

by children can be particularly harmful as this can increase their risks of cot death, asthma, respiratory conditions and middle ear infection, (NHS choices, 2015). Passive smoking has been found to cause nearly 34,000 premature deaths from heart disease each year. Passive smoking increases the risk of developing heart disease by 25–30%, it increases the risk for stroke by 20−30% and causes more than 8,000 deaths from stroke annually, (Centers for Disease Control and Prevention, 2016). This shows the importance of helping support individuals to stop smoking to not only improve their own health but also the health of others around them.

Smoking cessation is an important factor in improving the health of the nation and in 2014-15 the Government received £9.5 billion in revenue from tobacco tax (excluding VAT), (ASH, 2015). However, in 2012-13 the Government spent £87.7m on services to help people stop smoking and a further £58.1m on stop smoking medication, (ASH, 2015). Although smoking rates have reduced, about half of all regular cigarette smokers will eventually be killed by their addiction, which results in massive costs to the Government (ASH, 2015). Nearly £48.8million was spent on medications in 2013/14 to help people to stop smoking and despite these efforts, there were over 1.6million admissions to hospital for over 35s in 2013/14 for smoking related illnesses, (HSCIC, 2014). Circulatory disease was found to have the highest rate of admissions, where the primary cause was diagnosed as smoking. The second most common reason for admission was for cancers diagnosed as caused by smoking, (HSCIC, 2014). In 2012/13 an estimated 81% of admissions of cancers of the trachea, lung and bronchus were diagnosed as attributable to smoking and about 17 % of all deaths of adults aged 35 and over were estimated to be caused by smoking, (HSCIC, 2014).

Benefits of Smoking Cessation
There are many benefits of quitting smoking, (Frank, 1993; Pirie et al, 2012; Gourlay & Benowitz, 1996; Critchley & Capewell, 2003; Chen et al, 2007; Taylor et al, 2002) and it can reduce the risk of developing so many chronic illnesses, (Pirie et al, 2012; Critchley & Capewell, 2003; Chen et al, 2007; Taylor et al, 2002). The benefits of stopping smoking start 20 minutes from the last cigarette when the pulse and heart rate return to normal and after 24 hours, Carbon Monoxide leaves the body, (NHS Smokefree, 2016). One year after stopping, the risk of a heart attack falls to about half that of a smoker and within 15 years of remaining smoke-free, the risk falls to a level similar to that of a person who has never smoked, (ASH, 2015). If a person can quit smoking before they reach 30, they can reduce their risk of lung

cancer to that of a non-smoker by the time they are 60, (ASH, 2015). When stopping smoking, people find they can breathe more easily and cough much less because their lung capacity improves by up to 10% within nine months, (NHS Choices, 2016). As the blood circulation begins to improve over the first few weeks, physical activity becomes noticeably easier and the immune system will start to improve, making it easier to fight off and recover from illnesses, (NHS Choices, 2016). The sudden increase of oxygen in the body can increase energy and reduce tiredness, as well as reduce the feelings of stress, (NHS Choices, 2016). There are many other benefits to stopping smoking, including; saving money, improved fertility, smell and taste, less wrinkles, whiter teeth and longer life, (NHS Choices, 2016).

The benefits of quitting smoking are clear, individuals can prevent themselves from developing serious long-term health conditions, as well as other shorter-term health problems, (Critchley & Capewell, 2003; Chen et al, 2007; Taylor et al, 2002). This can save health services a great deal of money from reducing the number of chronic illnesses developing and allows them to have more funds available for un-preventable illnesses, (Cromwell et al, 1997; Fries et al, 1993). Thomsen et al, (2014) also found that when people quit smoking before surgery, it reduced their risk of post-operative complications, again reducing the costs to the health service. By delivering stop smoking services, the inequalities in smoking prevalence and the number of illnesses caused can be reduced, (Bauld et al, 2007). Also, by quitting smoking, individuals are increasing their life expectancy and reducing the risks of experiencing smoking related diseases and relying on health care, (Taylor et al, 2002). Lightwood & Glantz, (1997) found that by reducing smoking prevalence by 1% per year, it can reduce the costs to the health service by £billions and reduce the number of deaths by thousands.

There are many services around the UK working together to try to reduce the number of smokers, (Breslau & Peterson, 1996). Stop smoking services have made a big improvement in reducing the prevalence of smoking, however, more work needs to be done to target the most addicted smokers, (Bauld et al, 2007). It has been shown that it is important to increase the knowledge about the benefits of smoking cessation to these more addicted smokers to reduce health inequalities, (Schwartz, 1992). Smoking cessation services have been found to be effective at helping people to stop smoking by offering weekly one-to-one support, carbon monoxide monitoring and medication on prescription, (Bauld et al, 2009). Even though it is

costly to run a smoking cessation service, the benefits of this outweigh the cost of the healthcare needed for smoking related diseases, (Warner et al, 1996).

There are other ways to help people to stop smoking and as research in the area continue to grow, so do the services, (West et al, 2000). As services improve, it is understood that behavioural support is just as important to help people to stop smoking as providing medications, (Michie et al, 2011). Motivational interviewing is one of the most important factors in helping people to change behaviours, (Rollnick et al, 2010). This is a way of guiding a person to understand their own goals and strengths, to inspire motivation to change and promote an independent decision-making process, (Rollnick et al, 2010). Behavioural support in this way has been found to include four main functions: 1) addressing motivation, 2) find barriers and problem solving them, 3) use of medication and 4) supporting behavioural change techniques, e.g. building general rapport, (Michie et al, 2011). This has so far been found to be the most effective way to help support people to stop smoking and people are four times more likely to stop smoking long term with this type of support, (NHS Smoke free, 2016). There are alternative methods to help people to stop smoking, such as hypnosis, acupuncture and meditation, however, as the effects of these are difficult to measure, the results are inconclusive, (Isaacs, 2008). Doctors will usually recommend alternative therapies in combination with other methods, such as medications, (Isaacs, 2008). The most common and evidence based way to support individuals to stop smoking is with a combination of behaviour change techniques and use of smoking cessation aids, (NHS Smoke free, 2016).

Smoking Cessation and Weight Gain
Smoking cigarettes have often been used as a way for individuals to maintain a healthy weight and smokers often have a lower body weight than non-smokers, (Chiolero et al, 2008). However, very heavy smokers have been found to be more likely to have a higher body weight than lighter smokers and they are found to be linked with obesity and lower economic status, (Chiolero, 2008). There are five main reasons as to why people may gain weight when they stop smoking, these are: 1) smoking speeds up your metabolism, which means that the body starts to burn food and calories much faster than if they were not smoking, (NHS Choices, 2016). 2) The nicotine in cigarettes can suppress the appetite of the smoker, 3) food tastes better after stopping smoking and 4) they are more likely to crave sugary foods, (NHS Choices, 2016). Finally, people are more likely to eat to distract

themselves from the cravings and they are likely to replace the 'hand-to-mouth' action of smoking with eating, (NHS Choices, 2016). However, Hall et al, (1986), found that individuals who have less control over emotional eating were more likely to gain weight. Stamford et al, (1986), found that smoking cessation had no significant effects on metabolic rate and that individuals were just more likely to increase the number of calories consumed. Following this, Perkins, (1993), states that smoking cessation increases the body weight 'set point', compared to smoking that is thought to lower it, which can increase eating. Overall, it is thought that the molecular mechanisms involved in the smoking cessation weight gain is not fully understood but smoking has been shown to impair glucose tolerance and insulin sensitivity, (Filozof, et al, 2003).

Gaining weight can cause people to develop many long-term health conditions, (Mokdad et al, 2001). Second to smoking, obesity is one of the most serious threats to the health of the UK and has increased from 16.4% in 1993 to 25.1% in women and from 13.2% to 24.4% in men, (National Obesity Forum, 2015). The UK has the highest level of obesity in Western Europe, higher than countries such as France, Germany, Spain and Sweden, (NHS choices, 2015). Obesity levels in the UK, in the last 30 years, have increased rapidly and have more than trebled, (NHS choices, 2015). Currently, in the UK, 24.8% of adults are obese and 61.7% are either overweight or obese, (National statistics, 2013). It is estimated that by 2050 more than half of the population could be obese, (NHS choice, 2015). In adults, obesity is commonly defined as a body mass index (BMI) of 30 or more and it is associated with many common health problems, such as type 2 diabetes, cardiovascular disease and cancer, (Public Health England, 2016). The health problems relating to obesity, is estimated to cost £9.7 billion by 2050, which shows the current and future pressures on Public Health, (Public Health England, 2016). The research on obesity shows the importance of reducing the numbers of obese or overweight individuals in the UK, (Raaijmakers et al, 2015). It is important to try to increase the health of the nation and reduce costs to the government and NHS, which is a similar plan to smoking cessation, (Hollingworth et al, 2012). By maintaining a healthy weight, individuals can improve their lung function and reduce the symptoms of asthma, (Stenius-Aarniala et al, 2000).

It is important for individuals to remain a healthy weight to improve their health and the health of the nation, (Public Health England, 2016). Hudmon et al, (1999) showed that people who quit smoking were more likely to gain weight than individuals who relapse and this is

found to be more common and more likely in women, (Williamson et al, 1991). Weight gain correlates with disinhibited eating and negative affect eating but not restraint eating, (Hudmon et al, 1999). McBride et al, (1996) also found that long term quitters were more likely to gain weight as opposed to short term quitters or people who relapsed. Also, Hall et al, (1986) found that people who quit smoking for over a year gained more weight than people who relapsed but most of the weight gain occurred during the first six months of smoking cessation. Following this, overweight participants are more likely to gain weight than normal weight or obese participants, (Bush et al, 2014). The number of cigarettes smoked initially and the highest past body weight correlated positively with weight gain, (Hall et al, 1986). Farley et al, (2012) found that individuals that used Champix to quit smoking were less likely to gain weight in the short term but individuals who exercised were less likely to gain weight in the long term.

Williamson et al, (1991) showed that weight gain is a side effect of quitting smoking in the minority of quitters. There is a big variability in the amount of weight gain between different individuals but younger people, lower socio-economic status and heavier smoking are linked to higher weight gain than others, (Williamson et al, 1991). However, research shows that weight change after smoking cessation appears to be influenced by underlying genetic factors, (Filozof, 2004). As many as 75% women and 35% men report they would only tolerate minimal weight gain when quitting smoking before relapsing, (Froom et al, 1998; Leischow & Stitzer, 1991). Self-efficacy has been found to be a strong predictor of weight management with the higher the level of self-efficacy, the more likely they are to be a healthy weight, (Linde et al, 2006). The self-determination theory, (Deci & Ryan, 1985) is another important Health Psychology theory used to explain weight changes. It was found that people who had a motivation for weight loss are more autonomous, more likely to attend sessions and therefore more likely to lose weight, (Williams et al, 1996). This shows that people who are high in self-efficacy and motivation to lose weight or maintain a healthy weight, are more likely to do so.

Even though people may gain weight, the health benefits of quitting smoking outweigh the risks related to weight gain, (Copeland, 2015). However, the prospect of gaining weight can affect people's motivation to stay smoke free, Copeland et al, (2015). This makes smoking cessation and weight gain a very important area to research. If it is possible to reduce weight gain, more people may want to quit smoking (Copeland, 2015). Body image is an important

aspect within smoking cessation, this is defined as 'the perception that a person has of their physical self or body and the thoughts and feelings that result from that perception' and these feelings about themselves can be influenced internally or externally and can be both positive or negative, (National Eating Disorders Collaboration, 2016). Body image has a big effect on whether a person is likely to quit smoking or not, (Napolitano, et al 2011). It has been found that many young women are more likely to smoke to maintain their body image, despite the risks related to smoking, (Napolitano et al, 2011). Nademin et al, (2010), had similar results in that some of the main reasons for college aged women to smoke were for body image and weight concerns. Research shows a negative body image may negatively affect smoking cessation attempts and weight gain during smoking cessation may negatively impact on body image and result in an increased chance of relapse, (King et al, 2005). This also shows the challenges that services must promote the positive effects of smoking cessation when people are more worried about gaining weight, (Klesges et al, 1989). Following this, adolescent girls have been found to be more at risk of starting to smoke due to body image and eating concerns, (Stice & Shaw, 2003). This shows the importance of reducing weight gain in smoking cessation where possible, (Stice & Shaw, 2003).

Smoking Cessation Aids

Smoking cessation aids are an important factor when helping to support an individual to stop smoking due to the concerns individuals have of gaining weight during smoking cessation, (Emery et al, 2015; Landrau-Cribbs et al, 2015; Allen et al, 2013). Smoking cessation aids are used to help people to stop smoking whilst reducing their withdrawal symptoms. There are many different products used to prevent withdrawal symptoms within smoking cessation, weight gain is one of these withdrawal symptoms. The most common products are Nicotine Replacement Therapy (NRT) and Varencline Tartrate (Champix). NRT is the use of Nicotine based products that are used as a replacement to smoking. These products are used to get the amount of Nicotine needed to reduce withdrawal symptoms and to stop smoking, (NHS choices, 2016). Champix is a medication that blocks the Nicotine receptors, reduces withdrawal symptoms and reduces the enjoyment of smoking so people can stop smoking, (NHS choices, 2016). These have also been thought to help reduce weight gain when quitting smoking, (Taniguchi et al, 2014).

Dale et al, (1998) found that by using patches, it can delay smoking cessation related weight gain. Yang et al, (2013) found that a combination of two NRT products was more successful

at preventing weight gain in smoking cessation than mono-therapy or no products. Furthermore, Gross et al, (1989) found that by using Nicotine gum, people gained less weight compared with standard mint gum. Allen et al, (2013) found that the Nicotine patches alone increased appetite and therefore did not reduce weight gain in smoking cessation. Following this, Assali et al, (1999) found that people who used NRT, including combination therapy, still gained weight when stopping smoking and continued to gain weight after they stopped using the products. Leischow et al, (1992), found that individuals were likely to still gain weight during smoking cessation, regardless of NRT usage or dose but it was found by Dale et al, (1998) that the higher the levels of nicotine used, the lower the weight gain. Also, Jorenby et al, 1996), found that by using NRT, individuals were less likely to experience withdrawal symptoms or weight gain. There was also found to be less weight gain experienced when using NRT than just a placebo, (Allen et al, 2005). The ambiguity in previous research shows that more research is needed in this area to make a firm conclusion about the effects of NRT on withdrawal symptoms in smoking cessation, such as weight gain.

Taniguchi et al, (2014) compared Nicotine patches with Champix and found that the individuals were less likely to gain weight when using Champix. Ebbert et al, (2008), found that people using Champix to stop smoking had minimal weight gain. Following this, Aubin et al, (2008), also found that by using champix individuals had less cravings and withdrawal symptoms compared with using NRT. Sun et al, (2017), found that individuals were less likely to gain weight when using champix but they were more likely to relapse, however it is thought that more research is needed to make a firm conclusion, (Toll et al, 2008). Komiyama et al, (2013), found that people with a higher score of nicotine dependence were more likely to gain weight, regardless of smoking cessation aid.

However, Williamson et al, (1991), found that weight gain is a side effect of smoking cessation regardless of the products used and that it may help to reduce weight gain initially but not long term, (NHS Choices, 2016). Research shows conflicting results in current research related to different products to prevent weight gain in smoking cessation. Evidence shows the importance of continuing research in this area to find ways to prevent smoking cessation weight gain to increase the number of people quitting smoking, (Gross et al, 1989; Allen et al, 2013; Assali et al, 1999; Ebbert et al, 2008; Williamson et al, 1991).

Another type of smoking cessation aid is electronic cigarettes (e-cigarettes) and these are becoming increasingly popular to use within smoking cessation, (Voigt, 2015). ASH, (2015) show an estimated 2.6 million adults in Great Britain currently use e-cigarettes. E-cigarettes are an electronic device that creates a vapour (can be flavoured to taste better) that delivers nicotine, (NHS Choices, 2016). These products do not contain the harmful chemicals of Carbon Monoxide, Tar and many of the other chemicals found in cigarettes allowing people to stop smoking without the harmful effects associated with smoking cigarettes, (NHS Choices, 2016). E-cigarettes have been found to be successful at helping people to stop smoking, remain smoke-free and have minimal side effects, (Farsalinos et al, 2013; Polosa et al, 2011). According to Pokhrel et al, (2013) smokers who use e-cigarettes as a smoking cessation method are found to be serious about wanting to quit smoking and are likely to think of e-cigarettes as an effective alternative to assisting in the cessation process. E-cigarettes are commonly used by both men and women; however, women are more likely to use them to manage weight (Pineiro et al, 2016; Morean & Wedel, 2017). It has also been found that both cigarette smoking and e-cigarette use have similar effects on the brain but different effects on body weight and food intake (Ponzoni et al, 2015). There was found to be a significant relationship between weight and e-cigarettes in men but not women, (Delk et al, 2017) and individuals with eating disorders are more likely to use them to lose or manage their weight, Morean & L'Insalata, (2017). Currently, companies have been found to be looking at ways to create e-cigarettes that can support weight loss through chemicals that can alter metabolism and suppress appetite, Singh et al, (2017), due to the important area of preventing smoking cessation weight gain. Finally, it has been found that by using e-cigarettes, individuals can be less likely to gain weight during their smoking cessation process, (Russo et al, 2017), however, current research is limited.

Smoking cessation has been related to weight gain, (Koster-Rasmussen et al, 2015; Rom et al, 2015; Pieroni et al, 2015; Allen et al, 2013; Taniguchi et al, 2013). By comparing the three most popular methods (NRT, Champix and E-cigarettes), we can identify the smoking cessation aid that is found to have the least effect on weight during smoking cessation. As previous research has shown, NRT and champix have some levels of success at reducing weight gain in smoking cessation (Taniguchi et al, 2014; Yang et al, 2013). Research within e-cigarette use for smoking cessation and weight gain is limited and therefore, a comparison with E-cigarettes and other common methods is needed due to the increasing popularity of e-

cigarette use, (Loomis et al, 2016; Reid et al, 2015; Jiang et al, 2016; Andler et al, 2015). ASH, (2015), found that between 2010 and 2014 there was a rise in the number of current smokers who also use electronic cigarettes, from 2.7% in 2010 to 17.6% in 2014. However, there is some research that does show that electronic cigarettes can influence changes in weight, (Russo et al, 2016) and allow people to stop smoking with minimal side effects, (Polosa et al, 2011).

Smoking Cessation and Ethnicity

There is a wealth of research on the relationship between smoking cessation and weight gain, (Koster-Rasmussen et al, 2015; Rom et al, 2015; Pieroni et al, 2015; Allen et al, 2013; Taniguchi et al, 2013), which has compared different smoking cessation aids and their effect on weight. Smoking cessation aids are used by a range of different individuals, including within different ethnicities, (Pomerleau et al, 2001). Weight gain during smoking cessation can affect all different ethnic groups and it can be a reason why people continue to smoke, (Pomerleau et al, 2001). The South Asian population are twice as likely to develop Diabetes as other ethnicities within the UK and are more likely to develop it at an earlier age (NHS Choices, 2016). Also, Coronary Heart Disease (CHD) is more common in the South Asian population and the risk of dying early from CHD is high, (NHS Choices, 2016). Smoking is also very common in South Asian men and is the 'normal' thing to do within this population group regardless of the increased health risks for them, (Bush et al, 2003). Unfortunately, the number of smokers within this population group is not reducing very quickly and a specific smoking cessation promotion to target this group is important, (Woodward, 2005). There is a continuous increase in the number of smokers in this ethnicity group, compared with the slow reduction within other ethnicities, (Tsai et al, 2010). Women in the Asian ethnicity groups have been found to be more likely to deny their smoking habit, meaning there could be even more individuals in the Asian population taking up smoking than we know about, (Jung-Choi et al, 2011) but with minimal people stopping, (Huxley et al, 2007). This shows the importance of smoking cessation within this population to reduce their risks of developing CHD, reducing weight gain associated with smoking cessation to reduce their risks of Diabetes and to stop the steady increase in the number of smokers, (Yoon et al, 2010). Due to the risks of developing cardiovascular disease within the South Asian population and the costs to the government for smoking related illness, it shows how important it would be to target them specifically within smoking cessation, (Yoon et al, 2010; Jung-Choi et al, 2011; ASH, 2015). However, they have not been found to have high levels of motivation within

stop smoking attempts in the UK, (White et al, 2006). This could show the importance of developing interventions more culturally acceptable within ethnic minorities to increase motivation and prevent relapse, (White et al, 2006). The impact of the smoking epidemic in Asia and within the Asian population will become immense if public health measures are not urgently put into place to reduce the number of smokers and weight gain in this target group, (Asia Pacific Cohort Studies Collaboration, (2005).

Previous research using Asian populations with weight gain in smoking cessation is limited. However, Fulkerson & French, (2003) found that, in women, all ethnic groups were as likely as each other to smoke to prevent weight gain and that Asian men were more likely to smoke to prevent weight gain than white men. Tsai et al, (2008) had similar results in that Asian women were more likely to continue smoking to control their weight. However, it is important to be able to control weight and stop smoking to decrease prevalence of metabolic syndrome, which can help to prevent cardiovascular disease, (Park et al, 2004). Cigarette smoking has also been found to be an independent, modifiable risk factor for non-insulin dependent Diabetes, which again shows the importance of stopping smoking within the Asian population who are highest at risk, (Rimm et al, 1995). It is important to focus on weight gain in smoking cessation and ways to prevent this among the Asian population due to the risks of developing cardiovascular disease in the future, (Yoon et al, 2010). Yoon et al, (2010) found that there were serious changes in CVD risk factors associated with smoking cessation and these were mainly secondary to weight gain. Following this, Yoon et al, (2010), also stated that to reduce the risk of cardiovascular disease in quitters within the Asian population specifically, more attention should be focused on preventing weight gain within smoking cessation.

Previous research shows the importance of investigating weight within smoking cessation within different ethnic populations as it can often be a reason why people don't want to quit in fear of gaining weight, (McBride et al, 1996; Copeland et al, 2015; Pineiro et al, 2016; Pomerleau et al, 2001; Fulkerson & French, 2003; Tsai et al, 2008). Research shows how weight gain is associated with smoking cessation, (Koster-Rasmussen et al, 2015; Rom et al, 2015; Pieroni et al, 2015; Allen et al, 2013; Taniguchi et al, 2013) and this can be affected using different smoking cessation aids, (Taniguchi et al, 2014; Yang et al, 2013; Loomis et al, 2016; Reid et al, 2015; Jiang et al, 2016; Andler et al, 2015). By looking at the use of e-cigarettes when quitting smoking, it is possible to see if they can be more successful at

preventing weight gain than other smoking cessation aids (NRT, champix). Research shows that it is common to gain weight when stopping smoking and although some products have been found to be somewhat effective at preventing weight gain, (Taniguchi et al, 2014; Yang et al, 2013), research is limited around e-cigarette use for smoking cessation and weight gain, (Pineiro et al, 2016). It is also important to factor in other variables which may affect weight gain in smoking cessation, such as eating habits and physical activity levels. It is common for people making one lifestyle change (stop smoking), they are more likely to combine this with another health behaviour, (Allen et al, 2005). This can also be a reason why there is a change in people's weight when using e-cigarettes in smoking cessation, (Allen et al, 2005).

Aims and Objectives

The aims of the study were to determine whether weight changes occur during smoking cessation when using electronic cigarettes as a smoking cessation aid and this was compared with other smoking cessation aids. The study also looked at whether the Asian population, including Pakistani, Bangladeshi, Indian and Chinese are more likely to gain weight when quitting smoking compared to other ethnic groups.

Hypothesis

1. It was hypothesised that there would be less changes in weight when using electronic cigarettes when compared with other products.
2. It was predicted that there will be a difference in weight changes between ethnic groups.

Participants

Permission was granted by Luton Borough Council to recruit participants via the Live Well Luton stop smoking service. It is important to have the study where the Asian population is high. Over 30% of the population in Luton is Asian and has a high Asian smoking prevalence (Luton Borough Profile, 2011) and therefore the study was in Luton. The Luton Public Health Report, (2007) stated that the prevalence of Bangladeshi men to be smoking was as high as 45%, closely followed by Chinese men at 34% and Pakistani men at 25%. Women have been found to be less likely to smoke in the Asian population (less than 8%) compared with White British women at 26%, (ASH, 2011). This is thought to be most likely because it is more of a

taboo subject within the Asian population for women to smoke, compared to White British communities, (Tsai et al, 2008). Men are more likely to smoke in these South Asian areas due to protective factors in their culture which prevents women from taking up smoking, Tsai et al, (2008). However, women in these cultures are still smoking but less likely to admit it and therefore less likely to access stop smoking services, (Tsai et al, 2008). It has been found that in some Asian cultures, they believe that they should be able to use willpower over medications and may be less likely to use products to quit smoking, (Tsang et al., 2014). However, it has been known that individuals from the Asian population are more likely to quit smoking if they use champix, compared with NRT, (Fagerstrom et al., 2010).

A power analysis using Gpower (Faul & Erdfelder, 1996) was carried out to determine the appropriate sample size that would enable any effects to be identified. A minimum effect of 0.25 and a power of 0.95 were decided and the power analysis revealed that a sample size of 66 or more would be large enough to detect such effects. Therefore, each of the three smoking cessation aid groups (Nicotine Replacement Therapy, Champix and E-cigarettes) had around 22 participants. A summary table was completed with demographic information for the participants within each smoking cessation aid group, (see Table 1, page 136).

Recruitment

Participants were recruited through Live Well Luton stop smoking service. Participants had already discussed and decided their choice of smoking cessation aid with a specialist advisor to help them to stop smoking before being recruited for the study. This means that participants were assigned to groups before being recruited for the study, which could mean a possibility of some selection bias. However, this was controlled for where possible using the self-designed questionnaire.

Method

Variables

The repeated measures independent variable was weight, which was measured at baseline, 4 weeks, 12 weeks and 6 months.

There was an independent variable of smoking cessation aids: E-cigarettes, NRT and Champix. There was also a second independent variable of ethnicity: Asian and non-Asian.

Dependent variables include: Nicotine dependence, eating behaviours, physical activity levels and alcohol use.

Materials

The materials used for this study were an Information Sheet, (see Appendix 1, page 187), which explained to the participant about the aims of the study and what was asked of them. The information sheet also ensured the participants were aware that they did not have to take part in the study if they did not want to, could withdraw at any point, the information they gave would be anonymous and confidential and no harm would come to them for taking part. They were given this sheet to read at the beginning before being given anything else. After reading the information sheet, they were given a consent form to read and sign if they agreed to take part in the study, (see Appendix 2, page 189). By signing the consent form, they were agreeing they have read and understood the Information Sheet, they are aware of the potential risks (if any), agree to come back at week 4, 12 and 6 months and are taking part in this research study voluntarily. Following this, at the final session after 6 months, each participant was given a Debrief Sheet, (see Appendix 3, page 191). This debrief sheet was used to thank the participant for taking part, explain the research aims and offer them a contact should they want to know the results or have any questions about the study. This also gave me an opportunity to speak to the participant and ensure they were not affected by taking part in the study but if they felt they had been, there are contact details of places for support. There were also scales and a tape measure available at each clinic location.

Demographic Variables

A self-designed measure was created to measure any other variables not captured within the other measures, (see Appendix 4, page 193). This measure enabled the determination of a participant's background, smoking history and previous smoking cessation attempts. The questions were used to determine: age, ethnicity, gender, whether they have quit before, when they quit and how long for, what smoking cessation aid they used, whether their weight changed, whether they exercised previously, whether their eating or drinking habits changed, the number of alcohol units they drink, height, weight, BMI, waist circumference and smoking cessation aid used. The participants were asked for their weight, waist circumference and BMI calculated at each time point, 4 weeks, 12 weeks and 6 months. These questions were asked to help us to understand the participants smoking history,

smoking cessation history and previous changes to weight, eating, exercise or alcohol habits to help to explain changes in weight during this study.

There were five questionnaires measuring different aspects within an individual's attempt to stop smoking, these were given following the information sheet, consent form and self-designed measure in a counter balanced order:

Eating Behaviour

Two questionnaires to measure eating behaviours were The Adult Eating Behaviour Questionnaire (AEBQ), (Hunot et al, 2015), (see Appendix 5, page 196) and The Emotional Appetite Questionnaire (EMAQ), (Nolan et al, 2010), (see Appendix 6, page 200).

The AEBQ measured eight different aspects of eating behaviours, including: enjoyment of food, emotional overeating, emotional undereating, food fussiness, food responsiveness, slowness in eating, hunger and satiety response. The participants were asked whether they: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree to statements relating to each of the eight different eating behaviours. The responses were scored with strongly agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2 and strongly disagree = 1. Therefore, the higher the final score for each statement, the higher they relate to each of the eight aspects of eating behaviours. These were split into two groups, both with four aspects: 'food approach' scales (hunger, food responsiveness, emotional over eating and enjoyment of food) and 'food avoidance' scales (slowness in eating, emotional under eating, food fussiness and satiety response) with people who are overweight or obese being more likely to have a higher score on 'food approach' scales. This was used to determine any changes in eating behaviours at the different time points within the participants smoking cessation attempt to help explain any changes in weight.

The EMAQ asked the participants questions to look at the emotional response of eating in positive and negative situations. The participants were given different emotions and situations to associate with and asked if they eat much more or much less on a scale of 1-9 in these situations. The positive emotion and positive situation scores can be averaged to obtain a positive EMAQ score. The negative emotion and negative situation scores can also be averaged to obtain a negative EMAQ score. Both negative emotion EMAQ scores are significantly positively correlated with BMI and the correlations between positive EMAQ

scores and BMI were negative and significant. Therefore, the higher the negative score, the higher the BMI a person is likely to have and the higher the positive score, the lower the BMI a person is likely to have. This was also used to determine any changes in emotional eating at the different time points to explain changes in weight.

Physical Activity

Physical activity was measured using The Global Physical Activity Questionnaire (GPAQ), (Armstrong & Bull, 2006), (see Appendix 7, page 203). This questionnaire was used to understand how physically active participants were at the different time points in their smoking cessation attempt. This questionnaire looked at the physical activity levels people have for travelling, work, recreational activities and amount of time spent being sedentary and was summarised by the participants in minutes per week. The average number of active minutes is found to be around 30 minutes per week for women and 43 minutes per week for men and the average number of sedentary minutes per week for women is found to be 240 minutes and 360 minutes per week for men. Changes in physical activity levels over the different time points can help to explain changes in weight.

Nicotine Dependence

The questionnaire used to measure the participants level of dependence on nicotine was The Fagerstrom test for Nicotine Dependence (FTND), (Heatherton et al, 2006), (see Appendix 8, page 206). This questionnaire asked the participants questions about their smoking behaviour. Each answer the participants gave was scored and all scores were added together to give a final score of nicotine dependence out of 10 with a mean average score of 6. A score of 1-2 was low dependence, 3-4 was low to moderate dependence, 5-7 moderate dependence and 8+ was high dependence. By comparing the scores of nicotine dependence between participants, it could be used to help explain weight changes in smoking cessation.

Procedure

The London Metropolitan University research ethics committee and Live Well Luton Stop Smoking Service approved the study. Participants were recruited and asked to attend four different sessions, one at each of the different time points. At each time point, the questionnaires were counter balanced to control order effects.

Baseline session:

Participants were routinely attending the Live Well Luton stop smoking service for smoking cessation support. Within their first session, following the usual first session with a stop smoking advisor, they were given the information sheet to read and invited to take part. It was explained that they do not have to participate and if they do want to, they do not have to answer any questions they don't want to, they can withdraw at any point and any information that they had given would be destroyed. If they did decide to withdraw, it was emphasised that it will not affect any further treatment they would receive for smoking cessation. It was explained that all the information they give, will always remain anonymous and will not be identifiable with them. They were given a unique ID number in the first session so that it was possible to refer to the first and follow up sessions. If they wanted to take part, they were then given the consent form to read, which states that it is a requirement of the study to attend the follow up sessions at 4 weeks, 12 weeks and again at 6 months and then asked to sign. Once they had signed the consent form they were weighed, waist circumference measured and product used to quit smoking noted (previously discussed and decided with stop smoking advisor before taking part). The participant was then asked to complete the set of questionnaires in randomised order, including: self-designed instrument, Adult Eating Behaviour Questionnaire, (Hunot et al, 2015), Emotional Appetite Questionnaire, (Nolan et al, 2010), The Global Physical Activity Questionnaire, (Armstrong & Bull, 2006) and the Fagerstrom Test for Nicotine Dependence, (Heatherton et al, 2006). They were reminded that any information they gave would remain completely confidential.

Week 4, Week 12 and 6 months follow up:

At the follow up appointments, participants were reminded that they are free to withdraw from the study at any point and they do not have to answer any questions that they did not want to. If they did decide to withdraw, it was restated that it will not affect any further smoking cessation treatment they would receive. It was explained again that all the information they give, will always remain anonymous and will not be identifiable to them. If they agreed, they were then asked to sign the consent form and complete the set of questionnaires in randomised order, including: self-designed instrument, Adult Eating Behaviour Questionnaire, (Hunot et al, 2015), Emotional Appetite Questionnaire, (Nolan et al, 2010), The Global Physical Activity Questionnaire, (Armstrong & Bull, 2006) and the Fagerstrom Test for Nicotine Dependence, (Heatherton et al, 2006). They were then asked for their weight to be taken, waist circumference measured and smoking status noted. At the final

6 months follow up, they were then given the debrief sheet and asked for their feedback from the study. This was to ensure that no obvious distress has come from taking part in the study. If they were feeling affected by taking part, they were directed to the support links on the debrief sheet. At this point, they were reminded that they can still withdraw at any point and their information destroyed.

Design

An independent group, repeated measures mixed design was used for this study. There was a repeated measure variable for the study of weight at baseline, 4 weeks, 12 weeks and 6 months. There was an independent variable of smoking cessation aids, which had three levels: E-cigarette, Nicotine Replacement Therapy (NRT) methods and Champix. There was a second independent variable of ethnicity and this had two levels: Asian and non-Asian. Covariates included: Nicotine dependence (Fagerstrom test), eating behaviours (AEBQ and EMAQ), physical activity levels (GPAQ), gender and alcohol use (taken from a self-designed instrument).

Analysis

Firstly, to explore the differences between smoking cessation aid groups and their demographic variables at baseline, a between groups ANOVA was used. This was using smoking cessation aid as the independent variable and using variables; gender, age, ethnicity, weight, BMI, waist circumference, height and fagerstrohm score as the dependent variables.

To explore the effects of smoking cessation aids on weight, a mixed ANOVA was used to examine differences in weight between smoking cessation aids. This was using the smoking cessation aid variable of three levels: NRT, Champix and E-cigarette with weight at the different time points: Baseline, week 4, week 12 and 6 months. This was repeated for smoking cessation aids with BMI and waist circumference at the different time points. This was to analyse hypotheses 1. to see if there is a significant change in weight, BMI or waist circumference at the different time points using different smoking cessation aids.

Correlations were then used to examine the relationships between weight and other variables. This meant inputting all variables into a correlation matrix, including weight at all time

points, BMI at all time points, waist circumference at all time points, smoking cessation aid and ethnicity but also included all other variables collected in the questionnaires. These variables include; gender, age, smoking history, previous smoking cessation history, alcohol use, all eating behaviours at each time point, active and sedentary minutes at all time points and nicotine dependence. These correlations were used to examine the relationships between all variables to help to explain the changes in weight at the different time points.

Following on from the correlations, a multiple regression was used to identify predictors of weight change in smoking cessation. The variables that were found to have significant correlations with weight or BMI were inputted into a regression to find a significant model and amount of variance explained.

It was identified that gender was a significant variable in predicting weight change in smoking cessation so this was investigated further to identify any significant differences between genders. These were the same analysis as previously, with the same variables inputted but for either females only or males only. Firstly, an ANOVA was completed to understand the differences in weight between smoking cessation aids. Following the ANOVA, correlations were completed to understand any significant relationships between variables for males and females separately and weight changes. Finally, the significant correlations were inputted into a regression to find any significant predictors in weight changes for male or females separately.

Finally, a repeated measure mixed ANOVA was used to explore the effects that ethnicity can have on weight during smoking cessation to explore into hypothesis 2. This was also included in the variables inputted into the correlations to identify any significant changes in weight between Asian and non-Asian ethnic groups.

Results

Comparisons Between Baseline variables
To explore the differences between smoking cessation aid groups and their demographic variables at baseline, a between groups ANOVA was used. This was using smoking cessation aid as the independent variable and using variables; gender, age, ethnicity, weight, BMI, waist circumference, height and fagerstrohm score as the dependent variables. There was

found to be no significant differences between smoking cessation aid and gender, ethnicity, alcohol units, weight, height, BMI, waist circumference and Fagerstrohm. See Table 2, page 132, for full results:

Table 2: An ANOVA to explore the differences between smoking cessation aid groups and their demographic variables at baseline

		df	F	P
Gender	Between Groups	2	.603	.550
	Within Groups	63		
	Total	65		
Ethnicity	Between Groups	2	1.969	.148
	Within Groups	63		
	Total	65		
Age	Between Groups	2	3.528	.035
	Within Groups	63		
	Total	65		
Alcohol Units	Between Groups	2	.000	1.000
	Within Groups	63		
	Total	65		
Weight	Between Groups	2	.765	.470
	Within Groups	63		
	Total	65		
Height	Between Groups	2	1.184	.313
	Within Groups	63		
	Total	65		
BMI	Between Groups	2	.811	.490
	Within Groups	63		
	Total	65		
Waist Circumference	Between Groups	2	.721	.490
	Within Groups	63		
	Total	65		
Fagerstrohm	Between Groups	2	.313	.732
	Within Groups	63		
	Total	65		

However, there was a significant difference between smoking cessation aid and age. Following this, there was also a significant difference between smoking cessation aid groups and whether they had quit smoking before (F(2,63) = 5.606, p=0.006), when they quit (F(2,63) = 4.802, p=0.011), whether they gained weight last time (F(2,63) = 5.394, p=0.007), whether they exercises previously (F(2,63) = 3.454, p=0.038), eating behaviour satiety response (F(2,63) = 4.647, p=0.013) and eating behaviour SE (F(2,63) = 4.188, p=0.020). These were all significant differences between NRT and Champix groups, not e-cigarettes.

Weight change between each time point for all participants

After completing repeated measures t-test to look at changes in weight over the 6-month period, there were some significant changes in weight at different time periods. Between baseline and 12 weeks, there was a significant change in weight (t=.817, df=65, p=.001, S.D=2.33, d=0.07), between baseline and 6 months, (t=4.86, df=65, p<.0001, S.D=2.82, d=0.11), between week 4 and 6 months (t=2.35, df=65, p=.022, S.D=8.87, d=0.19) and between week 12 and 6 months (t=5.71, df=65, p<.0001, S.D=.99, d=0.04), all with a small effect size. There were no significant changes in weight between baseline and week 4 (p=.417, S.D=8.41) or between week 4 and week 12 (p=.086, S.D=8.72). There were also some significant changes in BMI at different time points; between baseline and 12 weeks (t=3.56, df=65, p=.001, S.D=.880, d=0.07), between baseline and 6 months (t=4.45, df=65, p<.0001, S.D=1.20, d=0.12), between week 4 and week 12 (t=2.55, df=65, p=.013, S.D=1.41, d=0.05) and between week 12 and 6 months (t=3.81, df=65, p<.0001, S.D=.580, d=0.05) all with a small effect size. There were no significant changes in BMI between baseline and week 4 (p=.127, S.D=1.14) or between week 4 and week 12 (p=.251, S.D=1.18). Following this, there were also some significant changes in waist circumference at different time points; between baseline and 6 months (t=2.77, df=65, p=.007, S.D=1.80, d=0.10), between week 4 and 6 months (t= 2.56, df=65, p=.013, S.D=2.09, d=0.11) and between week 12 and 6 months (t=3.32, df=65, p=.001, S.D=.719, d=0.049). There were no significant changes in waist circumference between baseline and week 4 (p=.769, S.D=1.18), between baseline and week 12 (p=.078, S.D=1.47) and between week 4 and week 12 (p=.095, S.D=1.76).

Weight Changes and Smoking Cessation Aid

Relationships between Smoking Cessation Aid and Weight Change

By looking at Table 1, (page 136) to compare each smoking aid with weight changes it was found that the largest weight gain was in the NRT category by 3kg, Champix was next with 2kg and E-cigarettes were the smallest with 1kg. The largest change found in BMI and Waist Circumference was again found with NRT increasing by one, Champix increased BMI only by 1 and there were no changes found of either BMI or Waist Circumference in the E-cigarette group. By comparing the effect of smoking aids on weight using repeated measures, between-subjects ANOVA, there was found to be no significant change on weight, BMI or waist circumference. See Table 3, page 134, for full results.

Table 3: Repeated Measures ANOVA to compare effects of smoking cessation aids on weight

	df	F	Sig
Weight and Smoking Aid	2.303	.924	.413
Error	72.558		
BMI and Smoking Aid	5.019	1.540	.194
Error	126.609		
Waist circumference and Smoking Aid	3.150	1.188	.319
Error	99.236		

Post hoc t-tests deleted

Demographic Variables and Smoking Aid

By comparing the demographic information for each smoking aid group (Table 1, page 136) to consider other variables that could explain these effects; the NRT category were found to be the highest in age, the least active and most sedentary, which also increased throughout the 6 months. They were the lowest alcohol drinkers but had the highest score for Nicotine Dependence (FTND score = 6). 92% of the champix category had quit before using NRT or no smoking cessation aid meaning they had more experience in smoking cessation. They were found to be the most active group, and the least sedentary but highest alcohol drinkers. The e-cigarette category had the highest percentage of males (68%), they had a higher mean weight at the beginning and were generally more sedentary but were lower alcohol drinkers.

These results support the hypothesis that that there would be less changes in weight when using e-cigarettes when compared with other products. Even though there was found to be some weight gain within the e-cigarette group, it was not statistically significant compared to NRT or Champix. Therefore, to analyse this further, correlations were performed to look at other variables which may be impacting on the weight changes within the smoking cessation aid groups.

Relationships between smoking cessation aid and other variables

Pearson's r test for correlation was used to explore variables impacting on weight changes. Nicotine Replacement Therapy (NRT) was found to have a significant positive correlation with previous smoking cessation weight gain, (r=.313, n=66, p=.011), previous cessation exercise, (r=.314, n=66, p=.010) and Slowness in Eating at baseline, (r=.260, n=66, p=.035), week 4, (r=.316, n=66, p=.010) and week 12, (r=.309, n=66, p=.012), all with a moderate effect size. These results show that NRT is having a significant impact on weight gain and has a significant relationship with how slowly people eat.

Champix was found to have a significant negative correlation with previous cessation weight gain, (r=-.347, n=66, p=.004), previous eating habits similar, (r=-.261, n=66, p=.034), previous eating habits, (r=-.272, n=66, p=.027) all with a weak effect size except previous cessation weight gain with a moderate effect size. There was found to be a significant positive correlation between champix and Hunger at week 4, (r=.246, n=66, p=.046), week 12, (r=.250, n=66, p=.043) and 6 months, (r=.254, n=66, p=.039) all with a weak effect size. Finally, there was also found to be a significant negative correlation between Champix and Satiety Response at week 4, (r=-.267, n=66, p=.030), week 12, (r=-.251, n=66, p=.042) and 6 months, (r=-.251, n=66, p=.042) all with a weak effect size. These results show that Champix has a significant impact on weight changes but in a negative direction in that people are less likely to gain weight when using Champix. There is also a significant relationship between Champix and some eating behaviours in that people using Champix are more likely to experience hunger but less likely to experience satiety response to food.

Table 1: A table of demographic information for all participants

Variable		Whole Group N (%)	NRT N (%)	Champix N (%)	E-Cigarettes N (%)	Asian N (%)	Non-Asian N (%)
Number of Participants		66 (100)	21 (32)	23 (35)	22 (33)	28 (42)	38 (58)
Gender	Male	39 (59)	12 (57)	12 (52)	15 (68)	23 (82)	17 (44)
	Female	27 (41)	9 (43)	11 (48)	7 (32)	5 (18)	21 (66)
Ethnicity	Asian	28 (43)	11 (52)	6 (26)	11 (50)		
	Non-Asian	38 (57)	10 (48)	17 (74)	11 (50)		
Previous smoking cessation	Yes	45 (68)	10 (48)	21 (91)	14 (63)	17 (61)	29 (76)
	No	21 (32)	11 (52)	2 (9)	8 (37)	11 (39)	9 (24)
Time of last quit attempt	Last Month	1 (2)	0	3 (13)	2 (10)	1 (4)	3 (8)
	Last Year	36 (55)	9 (43)	15 (65)	12 (53)	16 (57)	21 (56)
	Over 1 year ago	8 (12)	0	0	0	0	6 (16)
	Few years ago	0	0	3 (13)	0	0	0
	Over 5 years ago	0	1 (5)	0	0	0	0
	N/A	21 (32)	11 (52)	2 (9)	8 (37)	11 (39)	8 (20)
How long did you quit for?	Less than one month	24 (36)	7 (33)	8 (35)	9 (41)	11 (39)	12 (31)
	6 months	16 (24)	3 (15)	9 (39)	4 (18)	4 (14)	24 (62)
	Over 1 year	8 (12)	0	0	0	0	0
	Other	0	0	4 (17)	1 (4)	2 (6)	5 (13)
	N/A	21 (32)	11 (52)	2 (9)	8 (37)	11 (39)	9 (24)

Table 1: A table of demographic information for all participants

Variable		Whole Group N (%)	NRT N (%)	Champix N (%)	E-Cigarettes N (%)	Asian N (%)	Non-Asian N (%)
Previous smoking cessation aid	NRT	22 (33)	7 (33)	8 (35)	8 (37)	11 (39)	13 (33)
	Champix	8 (12)	0 (0)	4 (17)	0	0	7 (17)
	None	15 (23)	3 (15)	7 (30)	6 (26)	6 (22)	10 (26)
	N/A	21 (32)	11 (52)	6 (26)	8 (37)	11 (39)	9 (24)
Previous weight gain	Yes	2 (3)	0	1 (4)	1 (5)	1 (4)	1 (2)
	No	43 (65)	10 (48)	20 (87)	13 (58)	16 (57)	28 (74)
	N/A	21 (32)	11 (52)	2 (9)	8 (37)	11 (39)	9 (24)
Do you exercise?	Yes	6 (9)	1 (5)	1 (4)	4 (18)	2 (7)	4 (11)
	No	60 (91)	20 (95)	22 (96)	18 (82)	26 (93)	34 (89)
Previous exercise	Yes	7 (10)	1 (5)	2 (9)	4 (18)	2 (7)	4 (11)
	No	38 (58)	9 (43)	19 (83)	10 (45)	15 (54)	25 (65)
	N/A	21 (32)	11 (52)	2 (9)	8 (37)	11 (39)	9 (24)
Eating habits similar to previous?	Yes	41 (62)	10 (48)	17 (74)	13 (59)	16 (57)	26 (69)
	No	4 (6)	0	4 (17)	1 (4)	2 (7)	3 (7)
	N/A	21 (32)	11 (52)	2 (9)	8 (37)	10 (36)	9 (24)
What were your previous eating habits like?	Eat more	1 (2)	0	0	0	0	1 (3)
	Eat less	2 (3)	0	0	0	1 (4)	1 (2)
	Eat more unhealthily	3 (5)	0	0	2 (9)	1 (4)	2 (5)
	Changes in eating	0	0	4 (17)	0	0	0
	N/A	59 (90)	21 (100%)	19 (83)	20 (91)	26 (92)	34 (90)

Table1:
A table of demographic information for all participants

Variables		Whole Group N (%)	NRT N (%)	Champix N (%)	E-Cigarettes N (%)	Asian N (%)	Non-Asian N (%)
Alcohol units	0 units	38 (58)	13 (62)	11 (48)	14 (64)	27 (96)	11 (28)
	1-4 units	14 (21)	8 (38)	4 (17)	8 (36)	1 (4)	18 (47)
	5-10 units	11 (17)	0	8 (35)	0	0	10 (25)
	10+ units	3 (4)	0	0	0	0	0
Previous alcohol units	0 units	38 (58)	13 (62)	11 (48)	14 (64)	27 (96)	11 (28)
	1-4 units	14 (21)	8 (38)	4 (17)	8 (36)	1 (4)	18 (47)
	5-10 units	11 (17)	0	8 (35)	0	0	10 (25)
	10+ units	3 (4)	0	0	0	0	0
Smoking Aid	NRT	21 (32)				11 (39)	10 (27)
	Champix	23 (35)				6 (22)	17 (45)
	E-cigarette	22 (33)				11 (39)	11 (28)
Mean Scores (Standard Deviation)							
Age (years)		46(14.88)	53(15.13)	43(4.22)	43(3.63)	47(14.29)	46(15.45)
Height (metres)		1.7(.075)	1.68(.078)	1.7(.067)	1.7(.080)	1.7(.074)	1.7(.076)
Fagerstrom Score		5 (2.21)	6(2.29)	5(2.14)	5(2.27)	5(2.19)	5(2.21)
Baseline Weight (kg)		75(15.96)	71(13.28)	75(16.41)	77(17.88)	78(16.02)	72(15.72)
Week 4 Weight (kg)		74(17.58)	72(12.97)	75(16.32)	77(22.63)	78(15.41)	71(18.65)
Week 12 Weight (kg)		76(15.40)	73(13.36)	76(16.44)	77(16.43)	78(14.88)	73(15.64)
6-month Weight (kg)		76(15.55)	74(13.33)	77(17.03)	78(16.32)	79(14.67)	74(16.07)
Baseline BMI		26(5.33)	25(3.84)	26(5.35)	27(6.44)	28(4.85)	25(5.42)
Week 4 BMI		26(5.28)	26(3.74)	26(5.60)	27(6.22)	28(4.60)	25(5.55)
Week 12 BMI		27(5.23)	26(3.99)	26(5.61)	27(5.97)	28(4.52)	26(5.51)
6 month BMI		27(5.28)	26(3.92)	27(5.85)	27(5.92)	28(4.43)	26(5.66)
Baseline Waist Circumference (inches)		35(6.43)	35(5.79)	35(6.41)	37(7.09)	37(6.06)	34(6.39)

Table 1:
A table of demographic information for all participants

Variables		Mean Scores (Standard Deviation)					
		Whole Group **N (%)**	**NRT** **N (%)**	**Champix** **N (%)**	**E-Cigarettes** **N (%)**	**Asian** **N (%)**	**Non-Asian** **N (%)**
Week 4 Waist Circumference (inches)		35(6.39)	35(5.66)	34(6.65)	37(6.82)	37(5.95)	34(6.36)
Week 12 Waist Circumference (inches)		36(5.97)	35(5.78)	35(6.35)	37(5.93)	37(5.21)	35(6.23)
6-month Waist Circumference (inches)		36(6.11)	36(5.89)	35(6.52)	37(6.07)	37(5.31)	35(6.38)
Baseline Emotional Eating	Positive	5(.413)	5(.334)	5(.396)	5(.506)	5(.382)	5(.438)
	Negative	4(.831)	4(.986)	4(.715)	4(.804)	4(.681)	4(.935)
Week 4 Emotional Eating	Positive	5(.401)	5(.334)	5(.421)	5(.443)	5(.334)	5(.447)
	Negative	4(.839)	4(.970)	4(.711)	4(.848)	4(.679)	4(.949)
Week 12 Emotional Eating	Positive	5(.394)	5(.328)	5(.405)	5(.442)	5(.326)	5(.439)
	Negative	4(.856)	4(.972)	4(.759)	4(.848)	4(.689)	4(.970)
6-month Emotional Eating	Positive	5(.395)	5(.328)	5(.400)	5(.447)	5(.334)	5(.438)
	Negative	4(.833)	4(.967)	4(.750)	4(.795)	4(.681)	4(.938)
Baseline Active Minutes		96(527.33)	64(44.2.60)	131(658.65)	90(443.33)	53(383.96)	107(599.83)
Week 4 Active Minutes		89(507.78)	57(443.53)	127(662.98)	78(355.86)	42(294.99)	120(603.37)

Table 1:
A table of demographic information for all participants

	Mean Scores (Standard Deviation)					
Variables	**Whole Group** N (%)	**NRT** N (%)	**Champix** N (%)	**E-Cigarettes** N (%)	**Asian** N (%)	**Non-Asian** N (%)
Week 12 Active Minutes	77(506.71)	58(442.89)	128(661.32)	78(354.69)	34(294.55)	119(601.64)
6-month Active Minutes	89(512.18)	58(442.95)	130(673.22)	78(353.74)	42(291.94)	121(609.23)
Baseline Sedentary Minutes	310(154.17)	331(161.69)	271(115.65)	330(179.28)	326(146.45)	300(160.57)
Week 4 Sedentary Minutes	305(150.80)	305(157.12)	274(115.65)	315(175.11)	319(137.65)	294(160.90)
Week 12 Sedentary Minutes	298(150.17)	335(154.26)	269(115.65)	315(175.11)	319(137.65)	292(159.79)
6 month Sedentary Minutes	309(149.75)	340(152.36)	274(115.59)	315(175.11)	319(137.65)	302(159.43)
Baseline EF*	11(1.94)	11(1.89)	12(1.70)	11(2.21)	11(1.62)	11(2.17)
Week 4 EF*	11(1.86)	9(1.61)	12(1.66)	11(2.21)	11(1.62)	11(2.03)
Week 12 EF*	11(1.84)	11(1.56)	12(1.66)	11(2.21)	11(1.62)	12(1.99)
6-month EF*	11(1.83)	11(1.56)	12(1.67)	11(2.20)	11(1.62)	11(1.98)
Baseline EOE*	12(3.01)	12(3.54)	12(2.46)	12(3.12)	12(3.08)	12(2.99)
Week 4 EOE*	12(3.01)	12(3.51)	12(2.42)	12(3.19)	12(3.06)	12(3.00)
Week 12 EOE*	12(3.02)	12(3.52)	12(2.40)	12(3.19)	12(3.06)	12(3.01)
6-month EOE*	12(2.99)	12(3.52)	12(2.47)	12(3.06)	12(3.10)	12(2.97)
Baseline EUE*	15(3.35)	15(3.52)	14(3.32)	15(3.31)	15(3.05)	15(3.59)
Week 4 EUE*	16(3.51)	15(3.71)	14(3.13)	15(3.69)	15(3.16)	15(3.79)
Week 12 EUE*	15(3.63)	14(3.56)	14(3.12)	15(4.17)	14(3.60)	14(3.70)
6-month EUE*	14(3.43)	15(3.56)	14(2.92)	15(3.79)	14(3.22)	14(3.62)
Baseline FF*	14(2.09)	14(2.26)	15(2.33)	14(1.71)	14(2.23)	15(2.00)

Table 1:
A table of demographic information for all participants

Variables	Mean Scores (Standard Deviation)					
	Whole Group N (%)	**NRT** N (%)	**Champix** N (%)	**E-Cigarettes** N (%)	**Asian** N (%)	**Non-Asian** N (%)
Week 4 FF*	14(2.07)	14(2.40)	13(2.14)	14(1.73)	14(2.19)	14(2.00)
Week 12 FF*	15(2.60)	14(2.29)	15(3.43)	14(1.87)	14(3.17)	15(2.13)
6-month FF*	14(2.64)	14(2.29)	14(2.37)	14(1.64)	14(2.16)	15(2.05)
Baseline FR*	13(2.64)	12(2.45)	13(2.37)	12(3.03)	13(2.27)	13(2.90)
Week 4 FR*	13(2.69)	12(2.45)	11(2.65)	12(2.93)	13(2.18)	12(3.03)
Week 12 FR*	13(2.58)	13(2.10)	13(2.59)	12(2.98)	13(2.17)	13(2.88)
6-month FR*	13(2.54)	13(2.07)	14(2.52)	12(2.89)	13(2.10)	13(2.84)
Baseline SE*	11(1.56)	12(1.28)	10(1.50)	11(1.66)	11(1.65)	11(1.52)
Week 4 SE*	11(1.42)	12(1.28)	10(1.40)	11(1.28)	11(1.25)	11(1.55)
Week 12 SE*	11(1.46)	12(1.38)	11(1.34)	11(1.43)	11(1.25)	11(1.61)
6-month SE*	11(12.50)	13(21.93)	11(1.34)	11(1.28)	11(19.10)	11(1.60)
Baseline H*	15(3.37)	14(2.49)	15(3.44)	14(3.89)	15(2.91)	14(3.69)
Week 4 H*	15(3.32)	14(2.55)	16(3.34)	14(3.74)	15(2.90)	14(3.63)
Week 12 H*	15(3.21)	14(2.29)	16(3.23)	14(3.74)	15(2.86)	15(3.48)
6-month H*	15(3.25)	17(2.29)	16(3.21)	14(3.84)	15(2.86)	15(3.55)
Baseline SR*	12(2.39)	13(1.65)	11(2.20)	11(2.78)	12(2.30)	12(2.48)
Week 4 SR*	12(2.40)	13(1.77)	11(2.12)	11(2.77)	12(2.23)	12(2.55)
Week 12 SR*	12(2.34)	13(1.69)	11(2.07)	11(2.77)	12(2.18)	12(2.48)
6-month SR*	12(2.34)	13(1.69)	11(2.07)	11(2.77)	12(2.18)	12(2.48)

*EF – Enjoyment of Eating   *SR – Satiety Responsiveness
*EOE – Emotional Over Eating
*EUE – Emotional Under Eating
*FF – Food Fussiness
*FR – Food Responsiveness
*SE – Slowness in Eating
H – Hunger*SR – Satiety Responsiveness

Finally, E-cigarettes were also found to have a significant positive correlation with Recreational Active minutes at baseline, (r=.255, n=66, p=.039), week 4, (r=.310, n=66, p=.016) and week 12, (r=.296, n=66, p=.016), all with a weak effect size except at week 4, with a moderate effect size. These results show that the only significant relationship with E-cigarettes is recreational active minutes in that people using e-cigarettes are more likely to be active.

There was found to be a significant relationship between eating behaviours and smoking cessation aid, however e-cigarettes only seem to have a significant relationship with activity levels. This also supports the hypothesis in that that there would be less changes in weight when using electronic cigarettes when compared with other products. Following this, relationships between weight changes and other variables compared with smoking cessation aid were performed to help explain these findings.

Relationships between weight changes with other variables

Pearson's r test for correlation was used to explore variables impacting on weight differences, BMI differences and waist differences. There were found to be no significant correlations between weight differences and NRT, weight differences and Champix or weight differences and e-cigarettes. There were found to be no significant correlations between waist differences and NRT, waist differences and Champix, or waist differences and e-cigarettes. There were also found to be no significant correlations between BMI differences and NRT, BMI differences and Champix,or between BMI differences and e-cigarettes. See Table 4, page 144 for full results.

The only significant correlation found for BMI differences was baseline active travel minutes, week 4 recreational active minutes and week 12 recreational minutes. The only significant correlation found for weight differences was gender, the only significant correlation found for waist differences was previous eating habits and similarly between BMI differences and previous eating habits. All other comparisons produced non-significant findings, see Table 4, page 144 for full results from the Pearson's r correlations on weight, waist and BMI differences.

The p value was adjusted for multiple testing on each correlation.

Weight changes and co-variates

BMI and other variables

BMI is a measurement of weight and waist measurement changes, so this variable was analysed more thoroughly to examine relationships with other variables. BMI at baseline was found to have a significant positive correlation mainly with different eating behaviours. Following this, BMI at week 4 was found to have a significant positive correlation mainly with eating behaviours. At week 12, BMI was found to have a significant positive correlation with emotional over eating at baseline, week 4, week 12 and 6 months. There was also a significant correlation with different eating behaviours. Finally, BMI at 6 months also had a significant positive correlation with mainly eating behaviours, see Table 4, page 144 for full results.

There were no other significant (positive or negative) correlations between weight differences, BMI differences, waist differences or BMI at different time points with any other variables. The main outcome of this analysis shows that the main association with BMI changes in smoking cessation was gender and eating behaviours. Therefore, gender and eating behaviours were used to look at predictors of weight changes in smoking cessation using a multiple regression. For all results of the Pearson's r correlations for BMI, weight and waist differences, see Table 4, page 144.

Table 4: Pearson's r correlation to examine relationships between Weight, Waist, BMI Differences and BMI at each time point

Variables used for correlation	Weight Difference r	Waist Difference r	BMI difference r	Baseline BMI r	Week 4 BMI r	Week 12 BMI r	6-month BMI r
NRT	.079	.045	-.056	-.105	-.101	-.075	-.057
Champix	-.021	-.029	.031	-.051	-.014	-.038	-.035
E-cigarettes	-.056	-.015	.025	.155	.114	.112	.092
Gender	-.253*	-.171	-.218	.040	.007	.017	-.003
Ethnicity	.023	-.027	-.119	-.259*	-.235	-.245*	-.229
Age	.064	.089	-.023	.104	.139	.126	.129
Quit before	-.052	.032	.048	-.014	-.006	-.050	-.056
When quit before	.117	-.011	.024	.024	.018	.072	.081
Quit for how long	.064	.044	.011	.014	.016	.056	.064
Previous cessation aid	-.159	-.096	-.231	-.088	-.105	-.071	-.074
Previous cessation weight gain	.026	.004	-.048	-.058	-.063	-.024	-.027
Exercise regularly	.040	.020	-.038	.014	.014	.034	.031
Previous exercise regularly	.131	.081	.072	-.081	-.079	-.053	-.040
Previous eating similar	.149	.109	.134	.071	.060	.098	.104
Previous eating habits	-.126	-.357*	-.389*	.003	.011	.011	.028
Alcohol units	.033	-.029	-.054	-.078	-.075	-.080	-.063
Fagerstrom score	.089	.002	.047	-.054	-.104	-.061	-.060
EF†	-.040	-.098	.052	.243	.289*	.146	.236
Week 4 EF†	-.008	-.067	.067	.231	.280*	.225	.229)
Week 12 EF†	.032	-.032	.063	.221	.272*	.221	.226
6 month EF†	.022	-.044	.080	.209	.260*	.208	.212
FF†	.195	.029	.257*	.144	.127	.146	.154
Week 4 FF†	.199	.038	.271*	.121	.104	.128	.129

Table 4: Pearson's r correlation to examine relationships between Weight, Waist, BMI Differences and BMI at each time point

Variables used for correlation	Weight Difference r	Waist Difference r	BMI difference r	Baseline BMI r	Week 4 BMI r	Week 12 BMI r	6-month BMI r
Week 12 FF†	.204	-.015	.232	.209	.193	.230	.242
6 month FF†	.200	-.054	.201	.184	.166	.188	.196
EOE†	.056	.007	.040	.274*	.282*	.283*	.275*
Week 4 EOE†	.056	-.044	.029	.283*	.290*	.289*	.283*
Week 12 EOE†	.067	-.040	.035	.282*	.290*	.291*	.286*
6 month EOE†	.044	-.055	-.012	.289*	.296*	.297*	.289*
H†	-.099	-.104	.044	.256*	.279*	.245*	.252*
Week 4 H†	-.129	-.125	.024	.241	.262*	.224	.232
Week 12 H†	-.079	-.043	.043	.230	.256*	.223	.231
6 month H†	-.059	-.026	.057	.235	.261*	.229	.239
SR†	.088	-.044	-.063	.042	.009	.043	.055
Week 4 SR†	.103	.007	-.052	.017	-.015	.023	.033
Week 12 SR†	.080	-.016	-.045	.031	-.003	.034	.043
6 month SR†	.080	-.016	-.045	.031	-.003	.034	043
SE†	-.009	-.022	.002	.139	.126	.139	.162
Week 4 SE†	-.034	-.105	-.113	.190	.173	.186	.211
Week 12 SE†	-.026	-.095	-.019	.218	.274	.224	.161
6 month SE†	.357	.393	-.078	.132	.126	.125	.120
EUE†	.040	-.048	.053	.027	.052	.047	.053
Week 4 EUE†	.076	-.050	.073	.045	.073	.072	.076
Week 12 EUE†	.004	-.099	.047	.049	.071	.060	.065
6 month EUE†	.025	-.088	.034	.067	.092	.081	.086
FR†	-.124	-.057	.086	.390**	.406**	.354**	.357**
Week 4 FR†	-.101	-.061	.112	.410**	.426***	.378**	.380**
Week 12 FR†	.000	.021	.116	.406**	.430***	.391**	.396**

Table 4: Pearson's r correlation to examine relationships between Weight, Waist, BMI Differences and BMI at each time point

Variables used for correlation	Weight Difference r	Waist Difference r	BMI difference r	Baseline BMI r	Week 4 BMI r	Week 12 BMI r	6-month BMI r
6 month FR†	.182	.098	.218	.388**	.417***	.398**	.411**
PEE†	-.022	-.010	-.081	.105	.116	.115	.116
Week 4 PEE†	-.056	-.044	-.100	.101	.109	.106	.106
Week 12 PEE†	-.047	-.003	-.066	.076	.084	.082	.083
6 month PEE†	-.059	-.018	-.073	.064	.072	.070	.069
NEE†	.222	.108	.213	.211*	.296*	.319**	.315*
Week 4 NEE†	.218	.117	.215	.276*	.260*	.283*	.279*
Week 12 NEE†	.232	.156	.218	.267*	.253*	.278*	.274*
6 month NEE†	.231	.155	.220	.275*	.261*	.286*	.281*
Active work minutes	.018	-.126	.001	-.166	-.185	-.168	-.144
Active recreational minutes	-.127	-.038	.072	.009	.002	.005	-.006
Active Travel minutes	.030	.060	.266*	-.075	-.044	-.049	-.061
Sedentary minutes	.005	.180	-.046	.076	.073	.079	.081
Mean active minutes	.043	-.108	.158	-.120	-.136	-.130	-.113
Mean sedentary minutes	-.008	.172	-.080	.072	.071	.079	.084

*p<0.05	†EF – Enjoyment of Food	†SE – Slowness in Eating
**P<0.01	†FF – Food Fussiness	†EUE – Emotional under Eating
***P<0.001	†EOE – Emotional over Eating	†FR – Food Responsiveness
	†H – Hunger	†PEE – Positive Emotional Eating
	†SR – Satiety Responsiveness	†NEE – Negative Emotional Eating

Predictors of Weight Change in Smoking Cessation

The main variable that was significantly correlated with weight differences was gender, which was entered into a multiple regression using the standard method. A significant model emerged explaining 6.4% of the variation in weight differences within smoking cessation (adjusted $R^2 = .049$). Figure 1, page 148, shows the positive correlation between gender and weight differences with the regression line. The main variable that was significantly correlated with waist differences was previous eating habits, which was entered into a multiple regression using the standard method and a significant model emerged explaining 13% of the variance of waist differences in smoking cessation, (adjusted $R^2 = .114$). Figure 2, page 148, shows the positive correlation between waist differences and previous eating habits with the regression line. Finally, the only variable that showed significant correlation with BMI differences in smoking cessation was also previous eating habits, which was entered into a multiple regression using the standard method and a significant model emerged explaining 15% of the variance of BMI differences in smoking cessation, (adjusted $R^2 = .138$). Figure 3, page 149, shows the positive correlation between BMI differences and previous eating habits with the regression line. See table 5 below, for full results from the regression analysis:

Table 5: Predictors of weight, waist and BMI differences in smoking cessation

	B	SEB	P
Weight differences and Gender	-1.251	.598	.041
Waist differences and Previous Eating	-.414	.135	.003
BMI differences and Previous Eating	-.689	.204	.001

Figure 1: A scatter plot with regression line to show a significant association between weight difference and gender

A scatter plot with regression line to show a significant model between weight difference and gender
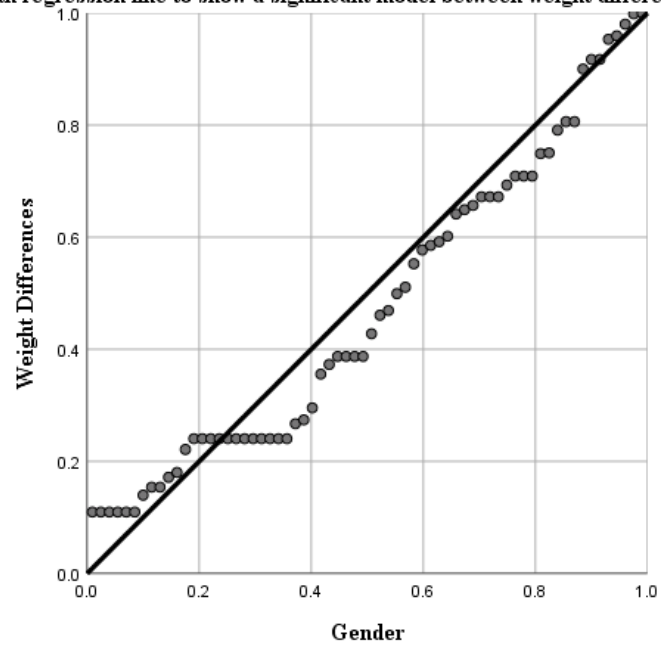
Figure 2: A scatter plot with a regression line to show a significant association between waist differences and eating habits

A scatter plot with a regression to show a significant model between waist differences and eating habits
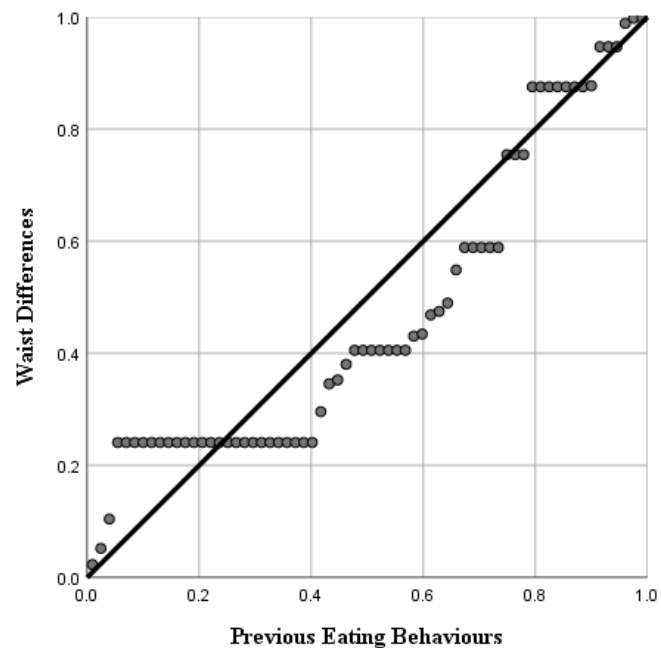
Figure 3: A scatter plot with a regression line for a significant association between BMI differences and eating habits

A scatter plot with a regression line for a significant model between BMI differences and eating habits
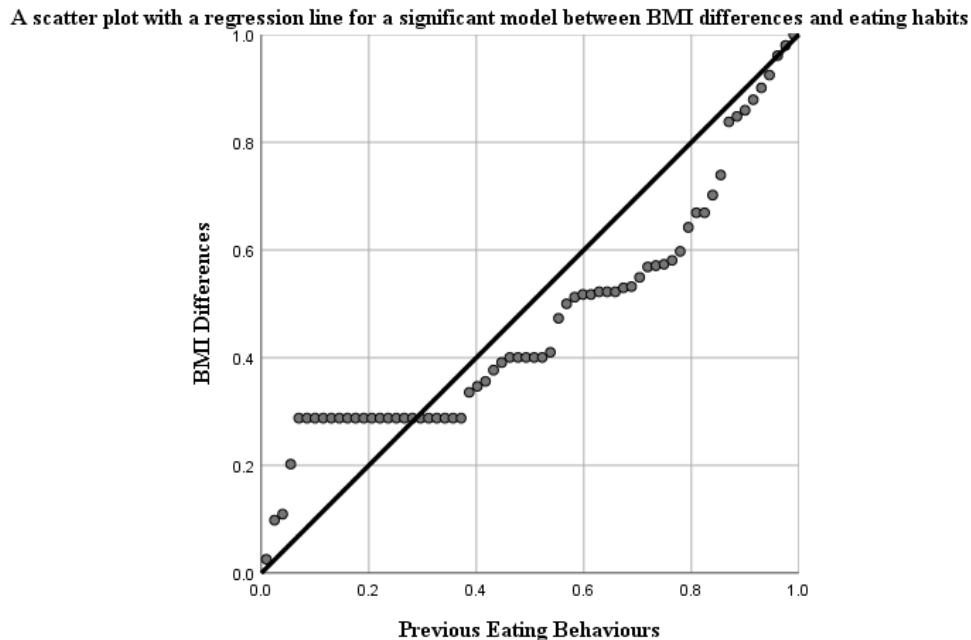
Predictors of BMI in Smoking Cessation

The main variables that were significantly correlated with BMI at baseline were: Emotional over Eating at all-time points, Food Responsiveness at all-time points, Negative Emotional Eating at all-time points and Recreational Active minutes at week 4. These were entered into a multiple regression using the standard model and no significant model emerged. The main variables that were significantly correlated with BMI at week 4 were Emotional over Eating at all-time points, Food Responsiveness at all-time points, Hunger at all-time points and Negative Emotional Eating at all-time points. These were entered into a multiple regression using the standard model and no significant model emerged. The main variables that were significantly correlated with BMI at week 12 was Emotional over Eating at all-time points, Food Responsiveness at all-time points and Negative Emotional Eating at all-time points. These were entered into a multiple regression using the standard model and no significant model emerged. Finally, the main variables that were significantly correlated with BMI at 6 months was Emotional over Eating at all-time points, Food Responsiveness at all-time points and Negative Emotional Eating at all-time points These were entered into a multiple regression using the standard model and no significant model emerged. See Table 6, page 151, for full results of the regression analysis.

This analysis has shown further that the main predictors of weight change in smoking cessation are gender and previous eating behaviours. As there could be significant differences between genders, this was analysed in more detail.

Gender and Weight Changes

Gender and Weight Changes in Smoking Cessation

There were 39 males compared with 27 females. The mean weight change in females was 2.94kg, waist difference was 1.11 inches and BMI difference was 1.56, compared to men with the mean weight change of 1.68kg, waist difference was 0.72 inches and BMI difference of 0.79. A series of t-tests were then completed to look at the changes in BMI at the different time points for both males and females separately. Figure 4, page 154, shows the differences in changes in BMI between both genders, with females gaining more overall.

Gender and BMI, Smoking Aid and Eating Behaviours

There was found to be a significant change in BMI for both men and women between different time points. To look at gender differences within smoking cessation, repeated measures t-tests were used to look at the effect smoking cessation aid can have on BMI at each time point. For both men and women, it was found to be significant at all time points.

Following this, a series of t-tests were completed to compare the effects of eating behaviours and gender. Both men and women were compared with each eating behaviour score.

For the full results from the repeated measures t-tests on gender, see appendix 9, page 208.

Table 6: Predictors of changes in BMI in smoking cessation

Baseline BMI	B	SEB	P
Baseline EOE	-.589	1.536	.703
Week 4 EOE	.256	1.899	.893
Week 12 EOE	.112	1.133	.922
6 months EOE	.250	1.223	.839
Baseline FR	-1.105	1.949	.573
Week 4 FR	-1.105	1.949	.573
Week 12 FR	.299	.872	.733
6 months FR	.290	.519	.649
Baseline EMAQ neg	9.487	7.822	.231
Week 4 EMAQ neg	-3.735	14.263	.794
Week 12 EMAQ neg	-3.721	9.252	.689
6 months EMAQ neg	-.437	12.346	.972
Week 4 REC active minutes	.019	.011	.092

Week 4 BMI	B	SEB	P
Baseline EOE	-.362	2.028	.859
Week 4 EOE	.454	2.180	.836
Week 12 EOE	.060	1.295	.963
6 months EOE	.104	1.509	.945
Baseline FR	1.264	2.102	.550
Week 4 FR	-.729	2.084	.728
Week 12 FR	.474	1.736	.786
6 months FR	.392	.532	.466
Baseline Hunger	-.407	1.053	.701
Week 4 Hunger	.616	3.491	.861
Week 12 Hunger	-2.727	4.750	.568
6 months Hunger	1.831	2.699	.501
Baseline EMAQ neg	6.990	10.195	.496
Week 4 EMAQ neg	-7.972	16.937	.640
Week 12 EMAQ neg	-10.000	10.578	.349
6 months EMAQ neg	11.924	19.163	.537

Week 12 BMI	B	SEB	P
Baseline EOE	-.713	1.525	.642
Week 4 EOE	.637	1.882	.736
Week 12 EOE	.332	1.128	.770
6 months EOE	-.128	1.215	.917
Baseline FR	.482	1.807	.790
Week 4 FR	-.438	1.916	.820
Week 12 FR	.128	.879	.885
6 months FR	.436	.520	.405
Baseline EMAQ neg	7.828	7.816	.321
Week 4 EMAQ neg	-6.890	14.204	.630
Week 12 EMAQ neg	-4.052	9.264	.664
6 months EMAQ neg	4.464	12.134	.714
6 months BMI	B	SEB	P
Baseline EOE	-.743	1.536	.631
Week 4 EOE	.673	1.895	.724
Week 12 EOE	.319	1.136	.780
6 months EOE	-.135	1.223	.913
Baseline FR	.545	1.820	.766
Week 4 FR	-.527	1.929	.786
Week 12 FR	.091	.885	.918
6 months FR	.536	.523	.310
Baseline EMAQ neg	7.823	7.871	.325
Week 4 EMAQ neg	-6.626	14.305	.645
Week 12 EMAQ neg	-3.470	9.330	.711
6 months EMAQ neg	3.601	12.220	.769

Relationships between Gender and other variables

Pearson's r correlations between different variables and each gender separately were completed to find any significant relationships between gender and BMI changes. There were 27 women and 39 men in the analysis that found no significant effect of mean number of active minutes on BMI differences for women (r=.151, N=27, p=.452) or men (r=.140, N=39, p=.394). There was found to be no significant effect of alcohol use on BMI differences in men (r=.041, N=39, p=.806) or women, (r=-.149, N=27, p=.458) and the mean number of alcohol units consumed for men and women were close with men having 3 compared with 2 for females, which is still within the recommended weekly guidelines, (DrinkAware, 2016). E-cigarettes were found to have a significant correlation in women for: baseline BMI, (r=.491, N=27, p=.009), week 4 BMI, (r=.423, N=27, p=.028), week 12 BMI, (r=.422, N=27, p=.028) and 6 months BMI (r=.408, N=27, p=.035) but men were found to have no significant correlation between e-cigarettes and BMI for: baseline BMI (r=-.110, n=39, p=.505), week 4 BMI, (r=-.126, N=39, p=.445), week 12 BMI, (r=-.121, N=39, p=.463) or 6 months BMI, (r=-.133, N=39, p=.418).

Following this, a Multiple Regression analysis was completed using the standard method to look at predictors of BMI in women only, using all 27 female participants, a significant model was found with the main significant predictors of BMI in women being e-cigarettes and eating behaviours, which explain 42% of the variance in BMI in women, (adjusted R^2 = .419). Similarly, a Multiple Regression analysis was completed for waist differences in women, a significant model was found with e-cigarettes and eating behaviours were found to be the main predictors for differences in waist circumference in smoking cessation, which explain 39% of the variance, (adjusted R^2 = .392). See Table 7, page 154, for full results from the regression analysis:

Table 7: Predictors of changes in BMI in smoking cessation for men and women separately

BMI women	B	SEB	P
E-cigarettes	4.976	2.131	.030
EF	.555	.576	.346
EUE	.279	.299	.361
FR	.344	.576	.346
EMAQ neg	2.266	.943	.026
Waist circumference women	B	SEB	P
E-cigarettes	6.176	2.080	.007
EMAQ neg	2.584	.888	.008

Figure 4: A simple boxplot to show weight differences between genders

A Simple Boxplot to show Weight Differences between Genders
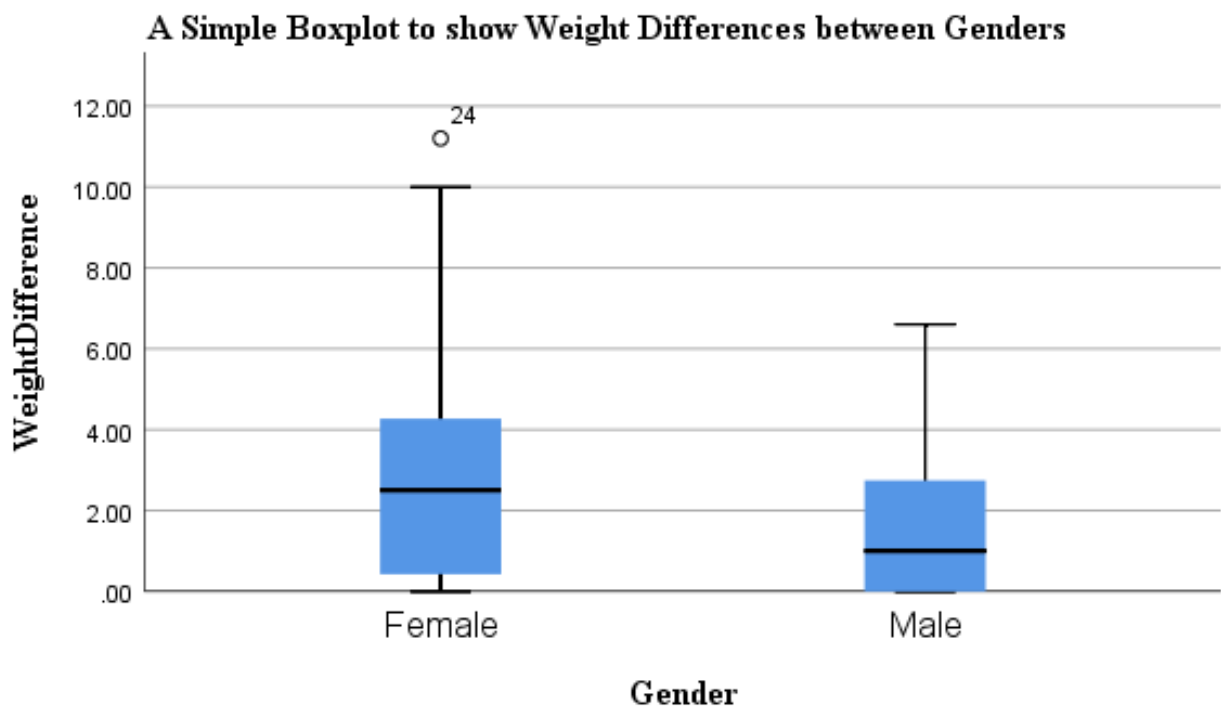
Other variables for BMI and Gender

By looking at the descriptive statistics within each smoking cessation aid group, the e-cigarette group women increased waist circumference by 1 inch, compared to men who increased by 0.8 inch, women started with a smaller BMI of 25.6 compared to men with 27.36 but women increased their BMI by 2.22, compared with men who only increased their BMI by 0.68. The weight difference for women in the e-cigarette group was 3.16kg and only 1.46kg for men. Similarly, for NRT the women increased their BMI by 1.34 compared with men who only increased by 0.68 and for Champix, women increased their BMI by 1.32 and men increased by 1.05.

Following this, repeated measures, between subjects' ANOVA was completed for both men and women to look at the effects on smoking cessation aid on BMI at the different time points. There were found to be no significant effects of smoking cessation aid on BMI in females or males, see Table 8, page 156 for full results.

Table 8: Repeated Measures ANOVA to look at smoking cessation aid on BMI in males and females

	df	F	Sig
Female BMI and Smoking Aid	3.741	.979	.425
Error	44.887		
Male BMI and Smoking aid	3.231	1.229	.308
Error	58.164		

The results show that gender and eating behaviours have the biggest impact on BMI changes in smoking cessation. Women are more likely to gain weight and increase their BMI when stopping smoking compared to men regardless of smoking aid. However, e-cigarettes were found to be a significant predictor in BMI changes in women and it was found that women increased their BMI the most in the e-cigarette group, compared to other smoking cessation aids. Previously, it was found that the e-cigarette group had the least amount of weight gain and BMI changes compared to the other smoking cessation aid groups but there was only a small sample of women in the e-cigarette group. The biggest predictor of BMI change in

smoking cessation has been found to be gender and eating behaviours, not smoking cessation aid.

Weight and Ethnicity

Relationships between Weight and Ethnicity

By looking at Table 1, (page 136), there were 28 participants in the Asian category and 38 in the non-Asian. To compare each ethnicity with weight, BMI and waist circumference changes it was found that the largest change was found in the Non-Asian category. Weight gain was 2kg, BMI and waist circumference were both increased by 1. The Asian category gained 1kg overall, 1-inch increase in waist circumference and no change in BMI.

By comparing the effect of ethnicity on weight, BMI and waist circumference using repeated measures, between-subjects ANOVA, there was found to be no significant change on weight but there was a significant change in BMI and waist circumference. See Table 9 below, for ANOVA results:

Table 9: Repeated Measures ANOVA to look at ethnicity and weight at different time points

	df	F	Sig
Ethnicity and Weight	1.168	.913	.357
Error	74.739		

Following this, post-hoc t-tests were completed to look at the changes in weight at different time points specifically. There were some significant results.

Ethnicity and Weight, Waist circumference and BMI

The Asian category showed a significant change in weight between: baseline and 6 months, week 4 and 12, week 4 and 6 months and week 12 and 6 months but no significant change in waist circumference or BMI at any time point. The Non-Asian category showed a significant change in weight, waist circumference and BMI at certain time points. For the full results from the post-hoc t-tests on ethnicity, see Appendix 10, page 210.

Ethnicity and other variables

By looking at the demographic variables of the Asian and Non-Asian ethnic groups (Table 1, page 136) to consider other variables that could explain these results. The Asian category have a much higher percentage of males compared with the non-Asian (82% vs 44%) and weighed more at baseline. Even though 96% of the Asian category was non-alcohol drinkers, they were half as active and overall more sedentary than the non-Asian category. The results of this analysis show that there were no significant effects of ethnicity on weight changes in smoking cessation.

Discussion

The aims of the study were to determine whether the use of E-cigarettes results in less weight gain when used as a smoking cessation aid. The study also looked at whether the Asian population, including Pakistani, Bangladeshi, Indian and Chinese, are more likely to gain weight when quitting smoking compared to other ethnic groups. It was hypothesised that using E-cigarettes in smoking cessation will help to reduce weight change when compared with other products. It was also predicted that there will be a difference in weight changes between ethnic groups.

There was found to be a significant change in weight, BMI and waist circumference between baseline and 6 months, at different time points. It is clear to see that the change in weight, BMI and waist circumference is an increase in all three. Interestingly, there was no significant change in weight, BMI or waist circumference between baseline and week 4 but there was a significant change for all three between baseline and 6 months and week 12 and 6 months. This shows that most of the changes in weight happens throughout the process of smoking cessation, rather than at the beginning. The results of this study show that smoking cessation aids do not prevent weight gain associated with smoking cessation, including e-cigarettes, although more research is needed to make a firm conclusion.

Smoking cessation aid and weight changes

Overall, the smoking cessation aid with the largest change in weight, BMI and waist circumference was Nicotine Replacement Therapy and the least was in the E-cigarette group. Following the completion of an ANOVA for each smoking aid, there was found to be no significant change in weight, BMI or waist circumference for any of the three smoking

cessation aids. These findings would suggest that the smoking cessation aid used is not the only factor that may be important when looking at weight changes in smoking cessation. This could mean that although the smoking cessation aid used could contribute to a reduction in smoking cessation weight changes, it may not help long term and they may not be the only important factors, (NHS Choices, 2016)**.** This would support the previous research in that people who used NRT still gained weight when stopping smoking, even if using a combination of products and continued to gain weight after they stopped using the products, (Assali et al, 1999). It has been previously found by Taniguchi et al, (2014) that individuals are less likely to gain weight when using Champix and Ebbert et al, (2008), found that people using Champix to stop smoking had minimal weight gain when taking it. This could be used to explain the reasons why the NRT group had the largest weight changes during smoking cessation and why previous research have found a significant change in weight when using NRT products, (Assali et al, 1999).

However, there was still found to be a significant change in weight, BMI and waist circumference in the Champix group but this was in the later stages of smoking cessation between baseline and 6 months and week 12 and 6 months. Previous research shows that e-cigarettes are commonly used by both men and women, however, women are currently more likely to use them to manage weight (Pineiro et al, 2016). It has also been found that both cigarette smoking and e-cigarette use have similar effects on the brain but different effects on body weight and food intake (Ponzoni et al, 2015). This shows that e-cigarettes can affect weight in smoking cessation and within the present study, there was no significant change in weight, BMI or waist circumference at any time point in the E-cigarette group but still an increase in weight, waist circumference and BMI in this group. This would suggest that e-cigarettes are no better at preventing weight gain in smoking cessation than other smoking cessation aids.

It was thought that activity levels of individuals could impact on the amount of change in weight they experience during smoking cessation but there was found to be no significant correlation with any smoking cessation aid or number of active minutes per week. The only variables that were found to be significantly correlated with weight, BMI or waist circumference differences were gender and eating behaviours. This does not support the hypothesis in that other variables may be significant factors contributing to weight changes in smoking cessation other than the smoking aid used. Women have been found to be more

likely than men to diet and be concerned about their weight and eat healthily, (Wardle et al, 2004). However, dieting and restricting food has also been shown to increase binge eating and therefore lead to weight gain, (Herman & Mack, 1975). Although, it was found that women are more likely to continue smoking to prevent weight gain, (Becker, 1974), it can also show how they are more likely to gain weight if they were to stop smoking. This can be due to a lack of perceived behavioural control over their diet during smoking cessation and this can lead to weight gain, (Ajzen, 1991).

To understand weight changes better, BMI was used to continue the research analysis to avoid repetition as BMI is thought to be the best calculation for weight changes and is commonly used to measure obesity, (Flegal et al, 2002). The main significant relationships with BMI at each time point were again, eating behaviours with Food Responsiveness having the most significant effect on BMI. This shows that eating behaviours play a significant part in any changes in weight during smoking cessation and could be a more important predictor than smoking cessation aid.

Predictors of Weight Changes

The main predictor of weight difference was gender. Eating behaviours were found to be the main predictor of changes in BMI and waist circumference. This shows that the main predictors of weight changes in smoking cessation may not be the smoking aid used but gender and eating behaviours. There has been extensive research into the area of weight and eating behaviours and it has been found that females are the most researched in this area, (Nederkoorn et al, 2010; French et al, 1999; Wardle, 2007) and eating behaviours can contribute to the current level of obesity, (Denney-Wilson E., 2008). Binge eating was found to be more prevalent among overweight women than normal-weight women, (French et al, 1999). Stress can also have a significant effect on eating behaviours, (Wardle, 2007). Low stressors lead to an increase in food intake, while more severe stress can reduce appetite, (Wardle, 2007). Following this, stress was found to increase the amount of sweet and fatty foods as a way of coping, compared to healthier foods, (Wardle, 2007). Following a review in this area, mindfulness has been found to be a successful tool in reducing negative eating behaviours and could lead to a reduction in weight when used as an intervention, (O'Reilly et al, 2004).

Gender and weight changes

In the present study, gender was a significant predictor in weight changes. Therefore, males and females were compared. There was found to be almost double the increase in weight, BMI and waist circumference in women compared to men, even though men did increase all three over all. Eating behaviours had a significant effect on weight changes and BMI in both men and women, due to stress, (Wardle, 2007; Torres, 2007), restraint, uncontrolled eating and emotional eating, (Karlsson et al, 2000). However, it has been found that women are affected most by eating behaviours and weight gain compared to men, (McLaren, 2007; Sobal & Stunkard, 1989).

When looking at factors that could contribute to changes in BMI in men and women separately. There were found to be no significant effects of exercise or alcohol use on BMI in either gender. There was a significant relationship of e-cigarettes and BMI in women and this was a significant predictor alongside eating behaviours. However, this was not significant for men. Women were found to gain almost double the weight in the e-cigarette group compared to men and so the predictor of changes in BMI is not a reduction but an increase in weight and BMI. Women are more likely than men to diet and be concerned about their weight and eat healthily, (Wardle et al, 2004). However, dieting and restricting food has also been shown to increase binge eating and therefore lead to weight gain, (Herman & Mack, 1975). This could be used to explain the reason why women are more likely to gain weight than men during a smoking cessation attempt, despite attempts to control their weight. Women have also been found to be more likely to eat as a response to stress and reach for sweet foods during this time, (Epel et al, 2001). This could explain the reason for women gaining more weight during smoking cessation, (Epel et al, 2001). Although, women are more likely to continue smoking to prevent weight gain, (Becker, 1974), these results show how they are more likely to gain weight if they were to stop smoking. This can be due to a lack of perceived behavioural control over their diet during smoking cessation and this can lead to weight gain, (Ajzen, 1991).

In the present study, there was a lack of female participants in the e-cigarette group. If there had been more females in this group, it may have increased the overall weight, BMI or waist circumference of participants. As previously mentioned, women are affected most by eating behaviours and weight gain compared to men, (McLaren, 2007; Sobal & Stunkard, 1989). Women are more likely to use restraint eating and are therefore more vulnerable to psychological stress factors, which can lead to over-eating on unhealthy foods, (Greeno &

Wing, 1994). Another factor found to be important with women was high disinhibition, which has been strongly associated with weight gain, higher BMI and restraint-eating, (Hays et al, 2002).

In the present study, when looking at all three smoking cessation aid groups, the female participants gained the most overall in each group. This shows that e-cigarettes are no better at reducing smoking cessation weight gain than any other smoking cessation aid. It also shows that women are more likely to gain weight when stopping smoking, compared to men, due to eating behaviours as the main variable. This follows on from previous research, which shows that women are more likely to gain weight than men when stopping smoking, (Filozof et al, 2004; Williamson et al, 1991; Froom et al, 1998). It has also been found previously that women have many more weight issues compared with men; they have more food-related conflict than men due to the fact they like fattening foods but believe that they should not eat them. There are many pressures to be thin from a young age and women are more likely to be dissatisfied with their body compared to men, (Rolls et al, 2001).

The results from the present and previous studies show the importance of using health psychology models to look further into ways to prevent smoking cessation weight gain. The Theory of Planned Behaviour, (Ajzen, 1991) could help us to understand why women are more likely to gain weight during smoking cessation. This theory shows that a lack of perceived behavioural control over their diet during smoking cessation can lead to weight gain. Ajzen, (1991) added an extra variable into the Theory of Reasoned Action, (Fishbein & Ajzen, 1975), a variable called perceived behavioural control to progress to the Theory of Planned Behaviour, (Ajzen, 1991). This refers to the perceived ease or difficulty of performing a behaviour, and is used to consider previous experience as well as potential obstacles. According to Ajzen, (1991), perceived behavioural control is assumed to have a direct influence on intention. This shows that even though the health risks associated with post cessation weight gain do not outweigh the risks associated with smoking related illnesses, (Audrain-McGovern & Benowitz, 2011), people are still likely to relapse and continue smoking to prevent weight gain. If people have experienced post cessation weight gain on a previous attempt, they are more likely to anticipate this being a problem this time around and therefore find it more difficult to change this behaviour.

Overall, the main outcome of this study shows that smoking cessation aid alone, cannot be used to predict weight changes during smoking cessation. The most important factor found within this study to impact on smoking cessation weight gain was gender, with women more likely to gain weight compared with men. There are thought to be different explanations as to why this may be; there are many pressures to be thin from a young age and women are more likely to be dissatisfied with their body compared to men, (Rolls et al, 2001). Women are more likely than men to diet and be concerned about their weight and eat healthily, (Wardle et al, 2004). However, dieting and restricting food has also been shown to increase binge eating and therefore lead to weight gain, (Herman & Mack, 1975). Women have also been found to be more likely to eat as a response to stress and reach for sweet foods during this time, (Epel et al, 2001). This can be due to a lack of perceived behavioural control over their diet during smoking cessation and this can lead to weight gain, (Ajzen, 1991). These ideas can all be used to help us to understand and explain why women are more likely to gain weight in smoking cessation, however more research is needed in this area to make a firm conclusion and finds ways to prevent smoking cessation weight gain in the future.

Ethnicity and Weight

It was thought to be important to focus on weight gain in smoking cessation and ways to prevent this among the Asian population due to the risks of developing cardiovascular disease in the future, (Yoon et al, 2010). The greatest weight gain over the 6 months was in the non-Asian category. Previous research in Asian populations with weight gain in smoking cessation is also limited. However, it has been found to be a strong predictor of smoking in Asian communities to prevent weigh gain, (Fulkerson & French, 2003; Tsai et al, 2008; Park et al, 2004) but on this occasion, it is not strongly linked. However, following on from previous results, there was a much higher number of males in the Asian category compared to the Non-Asian category. This could explain why the non-Asian category gained more weight overall. It has been found previously that women are more likely to gain weight when stopping smoking regardless of the smoking cessation aid used or ethnicity, (Filozof et al, 2004; Williamson et al, 1991; Froom et al, 1998).

It was hypothesised that using E-cigarettes in smoking cessation will help to prevent weight change when compared with other products. Previous research shows that it is common to gain weight when stopping smoking. Although some products have been found to be somewhat effective at preventing weight gain, (Taniguchi et al, 2014; Yang et al, 2013),

research is limited around e-cigarette use for smoking cessation and weight gain, (Pineiro et al, 2016). The results of this study have shown for the hypothesis not to be supported and after investigating further, gender was found to be the biggest predictor of weight changes in smoking cessation. Women are more likely to gain weight than men and the low weight gain in the e-cigarette group was due to the lack of female participants, (Allen et al, 2014).

Gender was found to be the biggest predictor of weight changes in smoking cessation, which was not predicted within the hypothesis. Women are more likely to relapse or stop smoking for less time than men due to concerns about weight gain, (Wetter et al, 1999; Osler et al, 1999; Ward et al, 1997; Perkins, 2001). This can be used to help explain why the women gained more weight over the 6 months, (Wetter et al, 1999). Similarly, it was found that women are more likely to experience more severe withdrawal symptoms especially at certain times of their menstrual cycle. Women are more likely to have a fear of weight gain and need more support through their smoking cessation attempt, (Gritz et al, 1996). Women are more sensitive to weight gain at all stages of smoking cessation compared to men and those who are dieting during their smoking cessation are more likely to experience withdrawal symptoms, (Allen et al, 2014). Women gain more weight than men during a smoking cessation attempt and the older they are, the more weight they are likely to gain compared to younger females, (Allen et al, 2014). Following this, women are more likely to experience hunger or desire to eat as a withdrawal symptom from smoking than men, (Pirie et al, 1991). This shows that there is more to weight gain within smoking cessation than just the smoking cessation aid used. However, it has also been noted that more research is needed in this area to make a firm conclusion, (Perkins, 2001).

Study Limitations

In the present study, women were more likely to gain weight than men. In future research, more female participants would be needed to understand these findings further. Also, the study could benefit from being longitudinal in that changes in weight or relapse of smoking could happen over a longer period. It would be interesting to see if participants lose the weight gained, continue to gain weight or stay the same over a longer period compared to six months. However, it was thought that six months would be the best option to still reflect any weight changes. It is longer than a smoking cessation programme (12 weeks) so it was possible to look at weight changes post smoking cessation. It was also thought most likely

that any changes in weight after the 6-month period would not be related to smoking cessation.

The biggest criticism of this study was that it used self-selection for each smoking cessation aid group; the participants had already chosen their preferred cessation aid before taking part in the study. This could have been affected by previous experience and confidence in products. Participants could be biased towards the chosen product and this could change the effect of each product on the outcomes. If the participants were put into a group randomly, this would lead to a reduction in selection bias. This may affect how their weight or eating habits change and whether they are successful at stopping smoking. The more familiar or positive they feel about the product they use could mean they are more likely to stop smoking. However, this does not necessarily reduce the weight changes they experience. More personal questions specific to the participants, or interviews, could be used to understand the personal experiences they may have had that could help us to understand their changes in weight during the study.

Additionally, in this study, each participant was only told the research was looking at the effects of smoking cessation aid. This was to help prevent purposeful changes in their behaviour or habits, which may affect their weight. However, they were given a debrief sheet with contact details and information on places to go for support if they feel they were affected by the study. Also, they were given the option of contacting the researcher for information about the results of the study if they felt it would be useful to them. There are also a few limitations of using a repeated measures design as it can increase familiarity with the questions used. This can lead to an increase in boredom from the participants, which may affect concentration and accuracy of responses. It does help us to understand changes in behaviours throughout the six months and use this information to explain changes in weight. Counterbalancing was also used throughout the different time points to reduce order effects.

Future research around smoking cessation and weight is needed to understand weight gain during smoking cessation and discover ways to prevent this. This would help increase the number of people wanting to stop smoking. The results of the present study show that a larger sample of females would be needed for future research to investigate the effect of gender on

changes in weight during smoking cessation. Women are more likely to have concerns of weight gain during smoking cessation; therefore, future research could include both genders but investigate them separately. Another possibility for future research would be to design and delivering an intervention to prevent weight gain during smoking cessation. This intervention would cover medication use and smoking cessation support throughout, to prevent relapse, over a period of one year. Within these interventions, it would also be important to include other healthy lifestyles to try to reduce the weight change caused by smoking cessation. It could help to include a way of increasing physical activity within these sessions and nutritional advice to increase education about healthy eating, healthy snacks and ways to control eating as a response to stress. It would be important to include an element of behaviour change advice and to support and help individuals during smoking cessation. There could be the opportunity to increase activity levels and healthy eating habits to control weight gain. It has been found by previous research that targeted programs are needed to address issues of concern to young women smokers, as they are more likely to have a fear of weight gain, (Gritz et al, 1996). Women have been found to be particularly sensitive to weight gain at all stages of smoking cessation compared to men and those who are dieting during their smoking cessation attempt are more likely to experience withdrawal symptoms, (Allen et al, 2014).

The present study makes an original contribution to the existing literature on weight changes in smoking cessation. It is also the first study to look at the impact of using e-cigarettes as a smoking cessation aid and the affect it can have on weight changes. Future studies must also consider the rapid rate in which products are innovating and developing and the potential impact this may have on their results. To strengthen future studies on the use of e-cigarettes and its effect on weight changes, there should be an increase in female participants due to their fear of gaining weight, (Pirie et al, 1991). This and previous research shows that gender is an important factor when looking at smoking cessation due to fear of weight gain, (Klesges et al, 1989) and starting to smoke due to body image and eating concerns in women, (Stice & Shaw, 2003). Women are more likely to gain more weight than men, when stopping smoking, (Filozof et al, 2004; Williamson et al, 1991; Froom et al, 1998) due to the many pressures to be thin from a young age and women are more likely to be dissatisfied with their body compared to men, (Rolls et al, 2001). It is important to acknowledge and use these findings when designing and implementing future research into the use of e-cigarettes and its effect on

weight changes. This is to increase the number of women stopping smoking but with minimal weight change.

It would be a major public concern if people continue to smoke due to concerns about weight gain as it has been shown that the effects of smoking outweigh the effects of gaining weight considerably, (Copeland et al, 2015). Therefore, is it important to continue looking at ways to prevent weight gain during smoking cessation to help motivate more people to want to stop smoking. By using the Health Belief Model, (Becker 1974), it is important to ensure that people understand the severity of the smoking related illnesses they are at risk of developing compared with the risks of gaining weight. This will help to move people from pre-contemplation to contemplation or preparation phase to the action phase within the Transtheoretical Model of Change, (Prochaska & DiClemente, 1983). The level of awareness and knowledge of the benefits of smoking cessation could be supported by educational information for women. This could include methods to reduce changes in weight associated with smoking cessation to help support them to make an informed decision about stopping smoking. Also, mindfulness has been found to be a successful tool in reducing negative eating behaviours and could lead to a reduction in weight when used as an intervention, (O'Reilly et al, 2004).

Although e-cigarettes do have the potential to help millions of smokers reduce or quit and therefore have the potential to saves lives (Dautzenberg and Dautzenberg, 2014; Fagerstrom and Bridgeman, 2014), their use does not always appear to be the most important factor within smoking cessation. Fear of weight gain appears to be a contributing factor within women when making their decision on whether to stop smoking, (Pirie et al, 1991). This study has shown that the choice of smoking cessation aid is not always the best way to reduce smoking cessation weight gain. It is important to understand that there are other factors involved in this and therefore, it has been worthwhile for the future of this research to help potentially change policies and services in this area. This research shows the importance of behavioural change services that target all healthy lifestyle behaviours during smoking cessation to help prevent weight gain during this process, particularly in women.

Conclusion

In summary, this study has offered a unique addition to the area of health psychology by exploring factors that may help to reduce weight gain during smoking cessation. There has been previous research looking at choice of smoking cessation aid (NRT and Champix) to help prevent weight gain, (Koster-Rasmussen et al, 2015; Rom et al, 2015; Pieroni et al, 2015; Allen et al, 2013; Taniguchi et al, 2013), however, research on the use of e-cigarettes and its effect on weight is limited. It is thought that many people continue to smoke as a fear of gaining weight during the smoking cessation process, even though the risks of smoking outweigh those associated with weight gain, (Copeland et al, 2015). This shows the importance of research in this area, especially due to the increasing popularity of e-cigarettes, (Loomis et al, 2016; Reid et al, 2015; Jiang et al, 2016; Andler et al, 2015). Gender was found to be the biggest predictor of weight gain in smoking cessation, with women more likely to relapse or stop for less time than men due to concerns about their weight, (Wetter et al, 1999; Osler et al, 1999; Ward et al, 1997; Perkins, 2001). These results can be used to help explain why women gained more weight over the 6 months, (Wetter et al, 1999). Women have been found to be more likely than men to diet and be concerned about their weight and eat healthily, (Wardle et al, 2004), however, dieting and restricting food has also been shown to increase binge eating and therefore lead to weight gain, (Herman & Mack, 1975). This could be used to explain the reason why women are more likely to gain weight than men during a smoking cessation attempt, despite attempts to control their weight. This apparent contradiction may be due to a lack of perceived behavioural control over their diet, resulting in weight gain, (Ajzen, 1991). Therefore, to progress research in smoking cessation and weight, further research is needed for reducing emotional eating in women during smoking cessation. Given the timely nature of the present study due to the continuing development and use of e-cigarettes, the results of this research could be used within future interventions and research. These results could also be used to help strengthen smoking cessation interventions in the future and prevent relapse by reducing smoking cessation weight gain.

References

Allen, A. M., Kleppinger, A., Lando, H., Oncken, C., (2013). 'Effect of nicotine patch on energy intake and weight gain in postmenopausal women during smoking cessation.' Eating Behaviours. 14, 4. 420-423.

Allen, S. S., Hatsukam, D., Brintnell, D. M., & Bade, T., (2005). Effect of nicotine replacement therapy on post-cessation weight gain and nutrient intake: A randomized controlled trial of postmenopausal female smokers. Addictive Behaviours. 30(7), 1273-1280.

Allen, A. M., Oncken, C., & Hatsukami, D. (2014). Women and Smoking: The Effect of Gender on the Epidemiology, Health Effects, and Cessation of Smoking. *Current Addiction Reports.* 1(1), 53-60.

American Cancer Society (2015). Health Risks of Second hand Smoke. http://www.cancer.org/cancer/cancercauses/tobaccocancer/secondhand-smoke. (Accessed: 24/10/16).

Andler, R., Guignard, R., Wilquin, J-L., Beck, F., Richard, J-B., & Nguyen-Thanh, V., (2015). Electronic cigarette use in France in 2014. International Journal of Public Health.

Armstrong, T., & Bull, F., (2006). Development of the World Health Organization Global Physical Activity Questionnaire (GPAQ). Journal of Public Health. 14(2). 66-70.

Assali, A. R., Beigel, Y., Schreibman, R., & Shafer, Z., (1999). Weight gain and insulin resistance during nicotine replacement therapy. *Clinical Cardiology.* 22(5), 357-360.

Ash, Smoking Statistics, 2015. Ash action on Smoking Cessation. http://www.ash.org.uk/files/documents/ASH_93.pdf.http://www.ash.org.uk/files/documents/ASH_93.pdf. (Accessed: 6/1/16)

Ash, Smoking and Disease, 2015. Ash Action on Smoking Cessation. http://www.ash.org.uk/files/documents/ASH_93.pdf. (Accessed: 6/1/16.

ASH, (2016). Smoking and Disease. Ash Action on Smoking and Health.
file:///C:/Users/Tribe/Downloads/ASH_94.pdf. (Accessed: 17/10/16).

ASH, (2011). Tobacco and Ethnic Minorities.
http://ash.org.uk/files/documents/ASH_131.pdf. (Accessed: 25/1/16)

ASH, Tobacco and Economics, 2015. ASH action on smoking cessation.
http://www.ash.org.uk/files/documents/ASH_95.pdf. (Accessed: 16/5/16)

Asia Pacific Cohort Studies Collaboration, (2005). Smoking, quitting, and the risk of
cardiovascular disease among women and men in the Asia-Pacific region. International
Journal of Epidemiology. 34(5), 1036-1045.

Aubin, H. J., Bobak, A., Britton, J. R., Oncken, C., Billing Jr, C. B., Gong, J., Williams, K.
E., & Reeves, K. R., (2008). Varenicline versus transdermal nicotine patch for smoking
cessation: results from a randomised open-label trial. *Thorax.* 63, 663.

Audrain-McGovern, J., & Benowitz, N. L., (2011). Cigarette Smoking, Nicotine, and Body
Weight. *Clinical Pharmacology and Therapeutics.* 90(1), 164-168.

Bauld, L., Judge, K., & Platt, S., (2007). Assessing the impact of smoking cessation services
on reducing health inequalities in England: observational study. *Tobacco Control.* 16(6), 400-
404.

Bauld, L., Bell, K., McCullough, L., Richardson, L., Greaves, L., (2009). The effectiveness
of NHS smoking cessation services: a systematic review. *Journal of Public Health.* 1-12,
doi:10.1093/pubmed/fdp074

Breslau, N., & Peterson, E. L., (1996). Smoking Cessation in Young Adults: Age at Initiation
of Cigarette Smoking and Other Suspected Influences. *American Journal of Public Health.*
86(2), 214-220

British Lung Foundation, (2016). Why is smoking bad for me? https://www.blf.org.uk/support-for-you/smoking/why-is-smoking-bad-for-me. (Accessed: 14/10/16).

Bush, J., White, M., Kai, J., Rankin, J., & Bhopal, R., (2003). Understanding influences on smoking in Bangladeshi and Pakistani adults: community based, qualitative study. *BMJ.* 326:962.

Bush, T. M., Levine, M. D., Magnusson, B., Cheng, Y., Chen, X., Mahoney, L., Miles, L., & Zbikowski, S. M., (2014). Impact of baseline weight on smoking cessation and weight gain in quitlines. *Annals of Behavioural Medicine.* 47(2), 208-217.

Cahill, K., & Lancaster, T., (2014).'Workplace interventions for smoking cessation.' Cochrane Database of Systematic Reviews 2014, Issue 2. Art. No.: CD003440. DOI: 10.1002/14651858.CD003440.pub4.

Cancer Research UK, (2016). Passive smoking. http://www.cancerresearchuk.org/about-cancer/causes-of-cancer/smoking-and-cancer/passive-smoking. (Accessed: 17/10/16).

Centers for Disease Control and Prevention (US), (2010). *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General.* Atlanta (GA): Centers for Disease Control and Prevention (US); 2010.

Centers for Disease Control and Prevention (US), (2016). Health effects of Secondhand smoke. http://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/health_effects/. (Accessed: 25/10/16).

Chen, C-H., Shun, C-T., Huang, K-H., Huang, C-Y., Tsai, Y-C., Yu, H-J., & Pu, Y-S., (2007). Stopping smoking might reduce tumour recurrence in non-muscle-invasive bladder cancer. *BJU International.* 100(2), 281-296.

Chiolero, A., Faeh, D., Paccaud, F., & Cornuz, J., (2008). Consequences of smoking for body weight, body fat distribution, and insulin resistance. *The American Journal of Clinical Nutrition.* 87(4), 801-809.

Copeland, A. L., McVay, M. A., Martin, P. D., Rash, C. J., Kendzor, D. E., Baillie, L. E., Spears, C. A., & Geiselman, P. J., (2015). Smoking relapse and weight gain prevention program for postmenopausal weight-concerned women: A pilot study. Eating Behaviours. 18, 107-114.

Critchley, J. A., & Capewell, S., (2003). Mortality Risk Reduction Associated With Smoking Cessation in Patients With Coronary Heart DiseaseA Systematic Review. The *Journal of American Medical Association.* 290(1), 86-97.

Cromwell, J., Bartosch, W. J., Fiore, M. C., Hasselblad, V., & Baker, T., (1997). Cost-effectiveness of the Clinical Practice Recommendations in the AHCPR Guideline for Smoking Cessation. *The Journal of the American Medical Association.* 278(21),

Dale, L. C., Schroeder, D. R., Troy, Wolter, T. D., Croghan, I. T., Hurt, R. D., & Offord, K. P., (1998). Weight change after smoking cessation using variable doses of transdermal nicotine replacement. *Journal of General Internal Medicine.* 13(1), 9-15.

Dautzenberg, B. & Dautzenberg, M. D. (2014). Electronic cigarette: reliable and efficient? Presse Med.

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. New York, NY: Plenum.

Delk, J., Creamer, M. R., Perry, C. L., & Harrell, M. B., (2017). Weight status and cigarette and electronic cigarette use in adolescents. *American Journal of Preventative Medicine.* 54(1), 31-35.

Denney-Wilson, E., (2008). Eating behaviour and obesity. *BMJ.* 337.

Drink Aware, (2016). Alcohol Unit Guidelines. https://www.drinkaware.co.uk/alcohol-facts/alcoholic-drinks-units/latest-uk-alcohol-unit-guidance/. (Accessed: 5/6/17).

Ebbert, J. O., Croghan, I. T., Sood, A., Schroeder, D. R., Hays, J. T., & Hurt, R. D., (2008). Varenicline and bupropion sustained-release combination therapy for smoking cessation. *Nicotine and Tobacco Research.* doi: 10.1093/ntr/ntn031.

Emery, R. L., Levine, M. D., Cheng, Y., Marcus, M. D., (2015). Change in body weight does not mediate the relationship between exercise and smoking cessation among weight-concerned women smokers. *Nicotine and Tobacco Research.* 17(9), 1142-1148

Epel, E., Lapidus, R., McEwen, B., & Brownell, K., (2001). Stress may add bite to appetite in women: a laboratory study of stress-induced cortisol and eating behaviour. *Psychoneuroendocrinology.* 26(1), 37-49.

Fagerstrom, K. O., & Bridgman, K., (2014). Tobacco Harm Reduction: The need for new products that can compete with cigarettes. *Addictive Behaviours.* 39, 507-511.

Farley, A. C., Hajek, P., Lycett, D., Aveyard, P., (2012). 'Interventions for preventing weight gain after smoking cessation.' Cochrane Database of Systematic Reviews. 1. Art. No.: CD006219. DOI: 10.1002/14651858.CD006219.pub3.

Farsalinos, K. E., Romagna, G., Tsiapras, D., Kyrzopoulos, S., & Voudris, V., (2013). Evaluating Nicotine Levels Selection and Patterns of Electronic Cigarette Use in a Group of "Vapers" Who Had Achieved Complete Substitution of Smoking. *Substance abuse: Research and treatment.* 7: 139.

Filozof, C., Fernandez-Pinillia, M. C., & Fernandez-Cruz, A., (2004). Smoking cessation and weight gain. *Obesity Reviews.* 5(2), 95-103.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Flegal, K. M., Carroll, M. D., & Ogden, C. L., (2002). Prevalence and Trends in Obesity Among US Adults 1999-2000. *JAMA.* 288(14), 1723-1727.

Frank, E., (1993). Benefits of stopping smoking. *Western Journal of Medicine.* 159(1), 83-86.

FRANK, (2016). Tobacco. http://www.talktofrank.com/drug/tobacco. (Accessed: 14/10/16).

French, S. A., Jeffery, R. W., Sherwood, N. E., & Neumark-Sztainer, D., (1999). Prevalence and correlates of binge eating in a nonclinical sample of women enrolled in a weight gain prevention program. *International Journal of Obesity.* 23, 576-585.

Freund, K. M., Belanger, A. J., D'Agostino, R. B., & Kannel, W. B., (1993). The health risks of smoking the Framingham study: 34 years of follow up. *Annals of Epidemiology.* 3(4); 417-424.

Fries, J. F., Koop, C. E., Beadle, C. E., Cooper, P. P., England, M. J., Greaves, R. F., Sokolov, J. J., & Wright, D., (1993). Reducing healthcare costs by reducing the need and demand for medical services. *The New England Journal of Medicine.* 329(5), 321-325.

Froom, P., Samuel M., and Jochanan B., (1998). Smoking cessation and weight gain. *Journal of Family Practice.* June 1998: 460+. Academic OneFile. Web. 21 Oct. 2016.

Fulkerson, J. A., & French, S. A., (2003). 'Cigarette smoking for weight loss or control among adolescents: gender and racial/ethnic differences.' Journal of Adolescent Health. 32, 4. 306-13.

Gourlay, S. G., & Benowitz, N. L., (1996). The Benefits of Stopping Smoking and the Role of Nicotine Replacement Therapy in Older Patients. *Drugs and Aging.* 9(1), 8-23.

Greeno, C. G., & Wing, R. R., (1994). Stress-induced eating. *Psychological Bulletin.* 115(3), 444-464

Gritz, E. R., Nielsen, I. R., & Brooks, L. A., (1996). Smoking cessation and gender: the influence of physiological, psychological, and behavioral factors. *Journal of the American Medical Women's Association.* 51(1-2), 35-42.

Gross, J., Stitzer, M. L., & Maldonado, J., (1989). Nicotine replacement: Effects on post-cessation weight gain. *Journal of Consulting and Clinical Psychology.*57(1), 87-92.

Hall, S. M., Ginsberg, D., & Jones, R. T., (1986). Smoking cessation and weight gain. *Journal of Consulting and Clinical Psychology.* 54(3), 342-346.

Hays, N. P., Bathalon, G. P., McCrory, M. A., Roubenoff, R., Lipman, R., & Roberts, S. B., (2002). Eating behavior correlates of adult weight gain and obesity in healthy women aged 55–65. *The American Journal of Clinical Nutrition*. 75(3), 476-483.

Health and Social Care Information Centre, (2014). Statistics on Smoking. http://content.digital.nhs.uk/catalogue/pub17526/stat-smok-eng-2015-rep.pdf. (Accessed: 17/10/16).

Heatherton, T. F., Kozlowski, L.T., Frecker, R. C., & Fagerstom, K-O., (2006). 'The Fagerström Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire.' British Journal of Addiction. 86, 9. 1119-1127.

Herman, P. C., & Mack, D., (1975). Restrained and unrestrained eating. *Journal of Personalitty.* 43(4), 647-660.

Hollingworth, W., Hawkins, J., Lawlor, D. A., Brown, M., Marsh, T., & Kipping, R. R., (2012). Economic evaluation of lifestyle interventions to treat overweight or obesity in children. *International Journal of Obesity.* 34,(4), 559-556.

Hudmon, K, Gritz, E, Clayton, S, & Nisenbaum, R., (1999), 'Eating orientation, post-cessation weight gain, and continued abstinence among female smokers receiving an unsolicited smoking cessation intervention', Health Psychology, 18, 1, pp. 29-36

Hunot, C., Beeken, R. J., Croker, H., & Wardle, J., (2015). Development of the 'Adult Eating Behaviour Questionnaire' for appetitive trait measurement. European Conference on Obesity. 8.

Huxley, R., Jamrozik, K., Lam, T. H., Barzi, F., Ansary-Moghaddam, A., Jiang, C. Q., Suh, I., Woodward, M., (2007). Impact of Smoking and Smoking Cessation on Lung Cancer Mortality in the Asia-Pacific Region. Americal Journal of Epidemiology. 165(11), 1280-1286.

Isaacs, N., (2008). Alternative methods for quitting smoking: Hypnosis, Acupuncture, Meditation. *Health*. http://www.health.com/health/condition-article/0,,20213799,00.html. (Accessed: 19/10/16).

Jorenby, D. E., Hatsukami, D. K., Smith, S. S., Fiore, M. C., Allen, S., Jensen, J., & Baker, T. B., (1996). Characterisation of tobacco withdrawal symtpoms: transdermal nicotine reduces hunger and weight gain. *Psychopharmacology.* 128(2), 130-138.

Jiang, N., Chen, J., Wang, M-P., McGhee, S. M., Kwong, A. C. S., Lai, V. W. Y., & Lam, T-H., (2016). Electronic cigarette awareness and use among adults in Hong Kong. Addictive Behaviours. 52, 34-38.

Jung-Choi, K-H., Khang, Y-H., & Cho, H-J., (2011). Hidden female smokers in Asia: a comparison of self-reported with cotinine-verified smoking prevalence rates in representative national data from an Asian population. BMJ Global Health. <http://dx.doi.org/10.1136/tobaccocontrol-2011-050012.>

Karlsson, J., Persson, L. A., Sjostrom, L., & Sullivan, M., (2000). Psychometric properties and factor structure of the Three-Factor Eating Questionnaire (TFEQ) in obese men and women. Results from the Swedish Obese Subjects (SOS) study. *International Journal of Obesity.* 24, 1715-1725

King, T. K., Matacin, M., White, K. S., & Marcus, B. H., (2005). A prospective examination of body image and smoking cessation in women. *Body Image.* 2(1), 19-28.

Klesges, R. C., Meyers, A. W., Klesges, L. M., & LaVasque, M. E., (1989). Smoking, body weight, and their effects on smoking behavior: A comprehensive review of the literature. *Psychological Bulletin.* 106(2), 204-230.

Komiyama, M., Wada, H., Ura, S., Yamakage, H., Satoh-Asahara, N., Shimatsu, A., Koyama, H., Kono, K., Takahashi, Y., & Hasegawa, K., (2013). Analysis of factors that determine weight gain during smoking cessation therapy. *PLOS ONE.* 8(8)

Koster-Rasmussen, R., Permin, C. A., Siersma, V., Henriksen, J. E., Heitmann, B. L., Heldgaard, P. O., (2015). Back on track – Smoking cessation and weight changes over 9 years in a community based cohort study. Preventative Medicine – An International Journal Devoted to Practice and Theory. 81, 320-325

Landrau-Cribbs, E., Cobriales, J. A., & Cooper, T. V., (2015). General and Smoking Cessation weight concern in a Hispanic sample of light and intermittent smokers. Addictive Behaviours. 41, 29-33.

Leischow, S. J., & Stitzer, M. L., (1991). Smoking cessation and weight gain. *Addiction.* 86(5), 577-581.

Leischow, S. J., Sachs, D. P. L., Bostrom, A. G., & Hansen, M. D., (1992). Effects of differing nicotine replacement doses on weight gain after smoking cessation. *Archives of Family Medicine.* 1(2), 233-237.

Lightwood, J. M., & Glantz, S. A., (1997). Short-term economic and health benefits of smoking cessation. *Circulation.* 96(4), 1089-96.

Linde, J. A., Rothman, A. J., Baldwin, A. S., & Jeffery, R. W., (2006). The impact of self-efficacy on behavior change and weight change among overweight participants in a weight loss trial. *Health Psychology.* 25(3), 282-291.

Loomis, B. R., Rogers, T., King, B. A., Dench, D. L., Gammon, D. G., Fulmer, E. B., & Agaku, I. T., (2016). Nation and state-specific sales and prices for electronic cigarettes – U.S., 2012-2013. Americal Journal of Preventative Medicine. 50(1), 18-29.

Luton Borough Council, (2011). Consensus Data. Office for National Statistics. Research and Geospatial Information. Department of Environment and Regeneration.

Luton Primary Care Trust, Annual Public Health Report, (2007). Healthy Partnerships. https://www.luton.gov.uk/Health_and_social_care/Lists/LutonDocuments/PDF/Annual%20public%20health%20reports/Annual_Public_Health_Report_2006-07.pdf. (Accessed: 6/1/16.)

McBride, C. M., French, S. A., Pirie, P. L., & Jeffery, R. W., (1996). 'Changes over time in weight concerns among women smokers engaged in the cessation process.' Annals of Behavioural Medicine. 18, 4. 273-9

McLaren, L., (2007). Socioeconomic Status and Obesity. *Epidemiologic Review.* 29 (1), 29-48

Morean, M. E., & L'Insalata, A., (2017). Electronic cigarette use among individuals with self-reported eating disorder diagnosis. *International Journal of Eating Disorders.* 51(1), 77-81.

Morean, M. E., & Wedel, A. V., (2017). Vaping to lose weight: Predictors of adult e-cigarette use for weight loss or control. *Addictive Behaviour.* 66, 55-59.

Michie, S., Hyder, N., Walia, A., & West, R., (2011). Development of a taxonomy of behaviour change techniques used in individual behavioural support for smoking cessation. *Addictive Behaviors.* 36(4), 315-319.

Mokdad, A. H., Ford, E. S., Bowman, B. A., Dietz, W. H., Vinicor, F., Bales, V. S., & Marks, J., S., (2001). Prevalence of obesity, diabetes and obesity-related health risk factors. *The Journal of the American Medical Association.* 289(1), 76-79.

Murphy-Hoefer, R., Alder, S., & Higbee, C., (2004). Perceptions about cigarette smoking and risks among college students. *Nicotine and Tobacco Research.* 6(3).

Nademin, M. E., Napolitano, M. A., Xanthopoulos, M. S., Fava, J. L., Richardson, E., Marcus, B., (2010). Smoking cessation in college-aged women: a qualitative analysis of factors important to this population. *Addiction Research and Theory*. 18(6), 649-666.

Napolitano, M. A., Lloyd-Richardson, E. E., Fava, J. L., Marcus, B. H., (2011). Targeting body image schema for smoking cessation among college females: Rationale, programme description and pilot study results. *Behaviour Modification.* 35(4), 323-346.

National Eating Disorders Collaboration, (2016). What is body image? http://www.nedc.com.au/body-image. (Accessed: 24/10/16).

National Statistics, NHS. Statistics on obesity, physical activity and diet: England, (2013). https://catalogue.ic.nhs.uk/publications/public-health/obesity/obes-phys-acti-diet-eng-2013/obes-phys-acti-diet-eng-2013-rep.pdf. (Accessed: 23/3/16)

Nederkoorn, C., Houben, K., Hofman, W., Wilhelm, R. A., & Jansen, A., (2010). Control yourself or just eat what you like? Weight gain over a year is predicted by an interactive effect of response inhibition and implicit preference for snack foods. *Health Psychology.* 29(4), 389-393.

NHS Choices, (2015). What are the health risks of smoking? http://www.nhs.uk/chq/Pages/2344.aspx?CategoryID=53. (Accessed: 14/10/16).

NHS Choices, Britain 'The fat man of Europe', (2015). NHS Choices, Your Health, Your Choices. http://www.nhs.uk/Livewell/loseweight/Pages/statistics-and-causes-of-the-obesity-epidemic-in-the-UK.aspx. (Accessed: 23/3/16)

NHS Choices, (2016). Is passive smoking harmful? http://www.nhs.uk/chq/pages/2289.aspx?categoryid=53. (Accessed: 17/10/16).

NHS Choices, (2016). 10 health benefits of stopping smoking. http://www.nhs.uk/Livewell/smoking/Pages/Betterlives.aspx. (Accessed: 17/10/16).

NHS Choices, (2016). Stop smoking without putting on weight.
http://www.nhs.uk/Livewell/smoking/Pages/weightgain.aspx. (Accessed: 20/10/16).

NHS Choices, (2016). Stop smoking treatments. http://www.nhs.uk/conditions/smoking-(quitting)/Pages/Treatment.aspx. (Accessed: 21/10/16).

NHS Choices, (2016). Carbon Monoxide poisoning. http://www.nhs.uk/Conditions/Carbon-monoxide-poisoning/Pages/Introduction.aspx. (Accessed: 24/10/16).

NHS Choices, (2016). South Asian Health Issues.
http://www.nhs.uk/livewell/southasianhealth/pages/overview.aspx. (Accessed: 24/10/16).

NHS Smoke Free, (2016). How smoking affects your body.
https://www.nhs.uk/smokefree/why-quit/smoking-health-problems. (Accessed: 14/10/16).

NHS Smoke Free, (2016). Quitting is the best think you'll ever do.
https://www.nhs.uk/smokefree/why-quit/what-happens-when-you-quit. (Accessed: 14/10/16).

NHS Smoke Free, (2016). Local stop smoking services. https://www.nhs.uk/smokefree/help-and-advice/local-support-services-helplines. (Accessed: 19/10/16).

National Obesity Forum, State of the nation's waistline, 2015.
http://www.nationalobesityforum.org.uk/images/state%20of%20the%20nations%20waistline%202015.pdf. (Accessed: 29/3/16)

Nolan, L. J., Halperin, L. B., & Geliebter, A., (2010). Emotional Appetite Questionnaire. Construct validity and relationship with BMI. Appetite. 54(2), 314-319.

O'Reilly, G. A., Cook, L., Spruijt-Metz, D., & Black, D. S., (2014). Mindfulness-based interventions for obesity-related eating behaviours: a literature review. *Obesity Reviews.* 15(6), 453-461.

Osler, M., Prescott, E., Godtfredsen, N., Hein, H. O., & Schnohr, P., (1999). Gender and Determinants of Smoking Cessation: A Longitudinal Study. *Preventative Medicine.* 29(1), 57-62.

Oxford Dictionary of English, (2015). *Oxford Dictionary of English*. (3rd Edition). UK; Oxford University Press.

Park, H. S., Oh, S. W., Cho, S-I., Choi, W. H., & Kim, Y. S., (2004). The metabolic syndrome and associated lifestyle factors among South Korean adults. *International Journal of Epidemiology.* 33(2), 328-336.

Perkins, K. A., (1993). Weight gain following smoking cessation. *Journal of Consulting and Clinical Psychology.* 61(5), 768-777.

Perkins, K. A., (2001). Smoking Cessation in Women. *CNS Drugs.* 15(5), 391-411.

Pieroni, L., Minelli, L., & Salmasi, L., (2015). Economic evaluation of the effect of quitting smoking on weight gains: Evidence from the United Kingdom. Value in Health. 18(6), 791-799.

Pineiro, B., Correa, J. B., Simmons, V. N., Harrell, P. T., Menzie, N. S., Unrod, M., Meltzer, L. R., & Brandon, T. H., (2016). Gender differences in use and expectancies in e-cigarettes: Online survey results. Addictive Behaviours. 52, 91-97.

Pirie, P. L., Murray, D. M., & Luepker, R. V., (1991). Gender differences in cigarette smoking and quitting in a cohort of young adults. *American Journal of Public Health.* Online: 2011.

Pirie, K., Peto, R., Reeves, G. K., Green, J., & Beral, V., (2012). The 21st century hazards of smoking and benefits of stopping: a prospective study of one million women in the UK. *The Lancet* , Volume 381 , Issue 9861 , 133 - 141

Polosa, R., Caponnetto, P., Morjaria, J.. B., Papale, G., Campagna, D., & Russo, C., (2011). Effect of an electronic nicotine delivery device (e-Cigarette) on smoking reduction and cessation: a prospective 6-month pilot study. *BMC Public Health.* 11, 786.

Pomerleau, C. S., Zucker, A. N., Brouwer R. J. N., Pomerleau, O. F., & Stewart, A. J., (2001). Race differences in weight concerns among women smokers: The results from two independent samples. Addictive Behaviours. 26(5), 651-663

Ponzoni, L., Moretti, M., Sala, M., Fasoli, F., Mucchietto, V., Lucini, V., Cannazza, G., Gallesi, G., Castellana, C. N., Clementi, F., Zoli, M., Gotti, C., & Braida, D., (2015). Different physiological and behavioural effects of e-cigarette vapor and cigarette smoke in mice. European Neuropsychopharmacology. 25(10), 1775-1786.

Prochaska, J. and DiClemente, C. (1983) Stages and processes of self-change in smoking: toward an integrative model of change. Journal of Consulting and Clinical Psychology , 5, 390–395.

Public Health England, About Obesity, 2016. https://www.noo.org.uk/NOO_about_obesity. (Accessed: 29/3/16).

Raaijmakers, L. C. H., Pouwels, S., Berghuis, K. A., & Nienhuijs, S., W., (2015). Technology-based interventions in the treatment of overweight and obesity: A systematic review. *Appetite.* 95, 138-151.

Reid, J. L., Rynard, V. L., Czoli, C. D., & Hammond, D., (2015). Who is using e-cigarettes in Canada? Nationally representative data on the prevalence of e-cigarette use among Canadians. Preventative Medicine: An International Journal Devoted to Practice and Theory. 81, 180-183.

Rimm, E. B., Chan, J., Stampfer, M. J., Colditz, G. A., Willett, W. C., (1995). Prospective study of cigarette smoking, alcohol use, and the risk of diabetes in men. *BMJ.* 310:555

Rolls, B. J., Fedoroff, I. C., & Guthrie, J. F., (1991). Gender differences in eating behavior and body weight regulation. *Health Psychology.* 10(2), 133-142

Rollnick, S., Butler, C. C., Kinnersley, P., Gregory, J., Mash, B., (2010). Motivational Interviewing. *BMJ.* 340:c1900

Rom, O., Reznick, A. Z., Keidar, Z., Karkabi, K., & Aizenbud, D., (2015). Smoking cessation-related weight gain – Beneficial effects on muscle mass, strength and bone health. Addiction. 110(2), 326-335

Roth, L. K., & Taylor, H. S., (2001). Risks of smoking to reproductive health: Assessment of women's knowledge. *American Journal of Obstetrics and Gynecology.* 184(5); 934-939.

Russo, C., Cibella, F., Caponnetto, P., Campagna, D., Maglia, M., Frazzetto, E., Mondati, E., Caruso, M., & Polosa, R., (2016). Evaluation of Post Cessation Weight Gain in a 1-Year Randomized Smoking Cessation Trial of Electronic Cigarettes. *Scientific Reports.* 6: 18763.

Schwartz, J. L., (1992). Methods of smoking cessation. The Medical Clinics of North America. 76(2), 451-476.

Singh, H., Kennedy, R. D., Lagasse, L., Czaplicki, L. M., & Cohen, J. E., (2017). E-cigarettes and weight loss – product design innovation insights from industry patents. *Nicotine Tobacco Research.* doi: 10.1093/ntr/ntx112.

Sobal, J., & Stunkard, A. J., (1989). Socioeconomic status and obesity: A review of the literature. *Psychological Bulletin.* 105(2), 260-275.

Stamford, B. A, Matter, S., Fell, R. D., & Papanek, P., (1986). Effects of smoking cessation on weight gain, metabolic rate, caloric consumption and blood lipids. *Americal Journal of Clinical Nutrition.* 43(4), 486-494.

Stenius-Aarniala, B., Poussa, T., Kvarnstrom, J., Gronlund, E-L., Ylikahri, M., & Mustajoki, P., (2000). Immediate and long term effects of weight reduction in obese people with asthma: randomised controlled study. *BMJ.* 320, 827-832

Stice, E., & Shaw, H., (2003). Prospective relations of body image, eating, and affective disturbances to smoking onset in adolescent girls: How Virginia slims. *Journal of Consulting and Clinical Psychology.* 71(1), 129-135.

Sun, Y., Duan, W., Meng, X., Li, H., & Jia, C., (2017). Varenicline is associated with a modest limitation in weight gain in smokers after smoking cessation: a meta-analysis. Journal of Public Health. https://doi.org/10.1093/pubmed/fdx056.

Taniguchi, C., Tanaka, H., Nakamura, N., Saka, H., Oze, I., Ito, H., Tachibana, K., Tokoro, A., Nozaki, Y., Nakamichi, N., & Sakakibara, H., (2014). 'Varenicline Is More Effective in Attenuating Weight Gain Than Nicotine Patch 12 Months After the End of Smoking Cessation Therapy: An Observational Study in Japan.' Nicotine and Tobacco Research. 16, 7. 1-1.

Taniguchi, C., Tanaka, H., Oze, I., Ito, H., Saka, H., Tachibana, K., Tokoro, A., Nozaki, Y., Nakamichi, N., Suzuki, Y., Suehisa, H., & Sakakibara, H., (2013). Factors associated with weight gain after smoking cessation therapy in Japan. Nursing Research. 62(6), 414-421.

Taylor, D. H., Hasselblad, V., Henley, S. J., Thun, M. J., & Sloan, F. A., (2002). Benefits of Smoking Cessation for Longevity. *American Public Health Association.* 92(6), 990-996.

The Free Dictionary, Smoking, (2016). http://medical-dictionary.thefreedictionary.com/smoking. (Accessed: 14/10/2016).

Thomsen, T., Villebro, N., & Moller, A. M., 2014. 'Interventions for preoperative smoking cessation.' Cochrane Database of Systematic Reviews 2014, Issue 3. Art. No.: CD002294. DOI: 10.1002/14651858.CD002294.pub4.

Toll, B. A., Leary, V., Wu, R., Salovey, P., Meandzija, B., O'Malley, S. S., (2008). A preliminary investigation of naltrexone augmentation of bupropion to stop smoking with less weight gain. *Addictive Behaviours.* 33(1), 173-179

Torres, S. J., (2007). Relationship between stress, eating behaviour, and obesity. *Nutrition.* 23(11-12), 887,894.

Tsai, Y-W., Tsai, T-I., Yang, C-L., Kuo, K-N., (2008). 'Gender Differences in Smoking Behaviours in an Asian Population.' Journal of Women's Health. 17, 6. 971-978.

Tsai, Y-W., Tsai, T-I., Yang, C. L., & Kuo, K. N., (2008). Gender differences in smoking behaviours in Asian populations. Journal of Women's Health. 17(7), 1-7.

Voigt, K., (2015) Social norms and the regulation of E-cigarettes. American Journal of Public Health. 105(10), 1967-1972

Ward, K. D., Klesges, R.C., & Zbikowski, S. M., (1997). Gender differences in the outcome of an unaided smoking cessation attempt. *Addictive Behaviours.* 22(4), 521(533).

Wardle, J., (2007). Eating behaviour and obesity. *Obesity Reviews.* 8(1), 73-75.

Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisie, F., (2004). Gender differences in food choice: The contribution of health beliefs and dieting. *Annals of Behavioural Medicine.* 27(2), 107-116.

Warner, K. E., Smith, R. J., Smith, D. G., & Fries, B. E., (1996). Health and Economic Implications of a Work-Site Smoking-Cessation Program: A Simulation Analysis. *Journal of Occupational & Environmental Medicine.* 38(10), 981-992.

West, R., McNeill, A., & Raw, M., (2000). Smoking cessation guidelines for health professionals: an update. *Thorax.* 55, 987-999, doi:10.1136/thorax.55.12.987.

Wetter, D. W., Kenford, S. L., Smith, S. S., Fiore, M. C., Jorenby, D. E., & Baker, T. B., (1999). Gender differences in smoking cessation. *Journal of Consulting and Clinical Psychology.* 67(4), 555-562.

White, M., Bush, J., Kai, J., Bhopal, R., & Rankin, J., (2006). Quitting smoking and experience of smoking cessation interventions among UK Bangladeshi and Pakistani adults: the views of community members and health professionals. *Journal of Epidemiology and Community Health.* 60; 405-411.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L., (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology.* 70(1), 115-126.

Williamson, D. F., Madans, J., Anda, R. F., Kleinman, J. C., Giovino, G. A., & Byers, T., (1991). Smoking cessation and the severity of weight gain in a National cohort. *The New England Journal of Medicine.* 324(11).

Woodward, M., (2005). Smoking, quitting, and the risk of cardiovascular disease among women and men in the Asia-Pacific region. *International Journal of Epidemiology.* 34(5), 1036-1045.

Yang, M., Bhowmik, D., Wang, X., & Abughosh, S., (2013). 'Does combination pharmacological intervention for smoking cessation prevent post-cessation weight gain? A systemic review.' Addictive Behaviors. 38, 3. 1865-1875.

Yoon, C., Goh, E., Park, S. M., & Cho, B., (2010). Effects of smoking cessation and weight gain on cardiovascular disease risk factors in Asian male population. Atherosclerosis. 208(1), 275-279.

Appendices

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APPENDIX 1

INFORMATION SHEET

Information sheet

The factors relating to the use of e-cigarettes as a smoking cessation aid

You have been invited to take part in a research study on factors influencing smoking cessation. It is up to you to decide whether you would like to take part. If you choose to, within your first smoking cessation appointment with Live Well Luton you will be asked to sign the consent sheet. Once completed, you will be asked to complete a questionnaire about your background and previous smoking cessation attempts, your current eating habits, physical activity levels and tobacco dependence. You will then be weighed and your waist circumference measured. This should take you no longer than 10 minutes to complete during this appointment within your local stop smoking clinic. You will then be asked to return for a follow up appointment after 4 weeks and again at 12 weeks, in which you will be asked to complete the same questionnaires, be weighed and waist circumference measured again. This will take part within your 12 week treatment programme and will be at your local stop smoking clinic. You will then be invited for an additional follow up session after 6 months, in which you will be asked to complete the same questionnaires again, weight and waist circumference measured. This study has been approved by the London Metropolitan University Psychology Research Ethics Committee and we don't anticipate any harm will come to you by taking part.

The data we collect will not contain any personal information about you except you will be allocated a client ID number so we can relate your first questionnaires and measurements with your subsequent ones. No one will link the data you provide to any personal information about yourself and we will not ask this as part of the study.

All data used will be completely anonymous and will not be kept for longer than is necessary. If you do not want to take part, you do not have to and if you decide to take part but later decide you would like to discontinue, you can do so without any explanation. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed.

If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins. We will be glad to answer your questions about this study at any time. You may contact Nicola Whippy at Nicola.swinden@livewell-luton.org.uk.

If you want to find out about the overall results of this study, you can contact Nicola as above.

APPENDIX 2

CONSENT FORM

Consent Form

The factors relating to the use of e-cigarettes as a smoking cessation aid

I understand that participation will involve completing a questionnaire that will ask about my age, gender, ethnicity, previous quit attempts, tobacco dependence, eating behaviour and physical activity levels. My weight and waist measurements will also be taken today, in 4 weeks, 12 weeks and again at 6 months. I understand that it is a requirement of this study to attend all follow up appointments, to be made today or at a later date when most convenient. I understand that I do not have to take part in this study and if I choose to, I can withdraw at any time.

By signing below, I agree that: (1) I have read and understood the Participant Information Sheet, (2) any questions I have about participation in this study have been answered satisfactorily, (3) I am aware of the potential risks (if any), and (4) I am taking part in this research study voluntarily (without coercion).

_____
Participants name (printed)*

_____   _____
Participant signature*   Date

_____   _____
Name of person obtaining consent (printed)   Signature of person obtaining consent

Participants wishing to preserve some degree of anonymity may use their initials (from the British Psychological Society Guidelines for Minimal Standards of Ethical Approval in Psychological Research, The British Psychological Society, 2010).

APPENDIX 3

DEBRIEF SHEET

Debrief Sheet

The factors relating to the use of e-cigarettes as a smoking cessation aid

Thank you for taking part in this study.

This study was an investigation on whether e-cigarettes can assist with smoking cessation because it is becoming increasingly popular to use e-cigarettes to quit smoking. As part of this study, we asked participants who were quitting smoking to complete questionnaires on tobacco dependence, eating behaviours and physical activity levels. With this information were able to compare smoking cessation products – NRT, Champix and E-cigarettes at how effective they are as smoking cessation aids.

Please contact Nicola Whippy at Nicola.swinden@livewell-luton.org.uk if you have any questions regarding this study or would like to hear a summary of the overall results at the end.

We do not anticipate any harm will come to you from taking part in this study, however, if you feel you may have been affected by any aspect of taking part, please see the extra sources of support below. If you decide you no longer want to take part, please let us know and we can discard any information you may have given us.

THANK YOU AGAIN FOR YOUR CO-OPERATION

Quitline: 0300 1231044
British Nutrition Foundation: 0207 5577930
www.livewell-luton.org.uk
www.samaritans.org

APPENDIX 4

SELF-DESIGNED DEMOGRAPHIC QUESTIONNAIRE

Background information

The factors relating to the use of e-cigarettes as a smoking cessation aid

1. **Are you male or female? (please tick):**
   Male □ Female □

2. **How old are you?:**_____(years)

3. **What is your ethnicity? (please tick):**
   White British□ White Irish □ Any other white background □
   Mixed White and Black Caribbean □ Mixed White and Black African □
   White and Asian□ Any other Mixed background□ Asian or Asian British Indian□
   Asian or Asian British Pakistani □ Asian or Asian British Bangladeshi □
   Any other Asian background □ Black or Black British Caribbean □
   Black or Black British African □ Any other Black background □
   Other ethnic group – Chinese □ Any other ethnic group □ Not stated □

4. **Have you ever tried to stop smoking in the past? (please tick)**
   Yes □   No □

5. **If yes, when and for how long did you stop smoking?**

   When:_____

   How long for:_____

5(a). **Did you use a smoking cessation aid for your last quit attempt? (please tick)**
   Yes □   No □

5(b). **If yes, what smoking cessation aid did you use? (please state)**
   _____

6. **Did your weight change when you last quit smoking? (please tick)**
   Yes □ No □

7. **If yes, did you gain or lose weight? (please tick)**
   Gain □ Lose □

8. **Do you exercise regularly? (please tick)**
Yes □ No □

9. **Is your exercise behaviour different from your previous quit attempt? (please tick)**
   Yes □ No □

10. If yes, how is your exercise behaviour different from your previous quit attempt? (please state)

_____

_____

11. Have your eating habits changed since your previous quit attempt? (please tick)
Yes □ No □

12. If yes, how have they changed? (please state)

_____

_____

_____

13. Do you drink alcohol? (please tick)
Yes □ No □

14. If yes, how many units per week do you drink? (please state)
Units per week:_____

15. Is this different from your previous quit attempt? (Please tick)
Yes □ No □

16. If yes, how is this different from previously? (please state)

_____

_____

Height:_____

Weight:_____

Waist circumferences (ins):_____

Smoking cessation aid:_____

APPENDIX 5

ADULT EATING BEHAVIOUR QUESTIONNAIRE

Adult Eating Behaviour Questionnaire
Please read each statement and tick the box most appropriate to you

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
I love food	☐	☐	☐	☐	☐
I often decide that I don't like a food, before tasting it	☐	☐	☐	☐	☐
I enjoy eating	☐	☐	☐	☐	☐
I look forward to mealtimes	☐	☐	☐	☐	☐
I eat more when I'm annoyed	☐	☐	☐	☐	☐
I often notice my stomach rumbling	☐	☐	☐	☐	☐
I refuse new foods at first	☐	☐	☐	☐	☐
I eat more when I'm worried	☐	☐	☐	☐	☐
If I miss a meal I get irritable	☐	☐	☐	☐	☐
I eat more when I'm upset	☐	☐	☐	☐	☐
I often leave food on my plate at the end of a meal	☐	☐	☐	☐	☐
I enjoy tasting new foods	☐	☐	☐	☐	☐
I often feel hungry when I am with someone who is eating	☐	☐	☐	☐	☐
I often finish my meals quickly	☐	☐	☐	☐	☐
I eat less when I'm worried	☐	☐	☐	☐	☐
I eat more when I´m anxious	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Neither agree disagree	Disagree	Strongly disagree or
Given the choice, I would eat most of the time	☐	☐	☐	☐	☐
I eat less when I'm angry	☐	☐	☐	☐	☐
I am interested in tasting new food I haven't tasted before	☐	☐	☐	☐	☐
I eat less when I'm upset	☐	☐	☐	☐	☐
I eat more when I'm angry	☐	☐	☐	☐	☐
I am always thinking about food	☐	☐	☐	☐	☐
I often get full before my meal is finished	☐	☐	☐	☐	☐
I enjoy a wide variety of foods	☐	☐	☐	☐	☐
I am often last at finishing a meal	☐	☐	☐	☐	☐
I eat more and more slowly during the course of a meal	☐	☐	☐	☐	☐
I eat less when I'm annoyed	☐	☐	☐	☐	☐
I often feel so hungry that I have to eat something right away	☐	☐	☐	☐	☐
I eat slowly	☐	☐	☐	☐	☐
I cannot eat a meal if I have had a snack just before	☐	☐	☐	☐	☐
I get full up easily	☐	☐	☐	☐	☐
I often feel hungry	☐	☐	☐	☐	☐
When I see or smell food that I like, it makes me want to eat	☐	☐	☐	☐	☐

If my meals are delayed I get light-headed	☐	☐	☐	☐	☐
I eat less when I'm anxious	☐	☐	☐	☐	☐

APPENDIX 6

EMOTIONAL APPETITE QUESTIONNAIRE

Appetite Questionnaire (EMAQ)

Please tell us first how your eating behavior is affected by certain emotional states and situations by **circling** a number on the scale below. The scale ranges from 1 to 9, where 1 represents much less food intake than usual, 9 much more than usual, and 5 the same as usual. If the specific question does not apply, please circle NA. If you don't know the answer, please circle DK.

The following refer to EMOTIONS

As compared to usual, do you eat:		Much less			The same			Much more			
When you are:	Sad	1	2	3	4	5	6	7	8	9	NA	DK
	Bored	1	2	3	4	5	6	7	8	9	NA	DK
	Confident	1	2	3	4	5	6	7	8	9	NA	DK
	Angry	1	2	3	4	5	6	7	8	9	NA	DK
	Anxious	1	2	3	4	5	6	7	8	9	NA	DK
	Happy	1	2	3	4	5	6	7	8	9	NA	DK
	Frustrated	1	2	3	4	5	6	7	8	9	NA	DK
	Tired	1	2	3	4	5	6	7	8	9	NA	DK
	Depressed	1	2	3	4	5	6	7	8	9	NA	DK
	Frightened	1	2	3	4	5	6	7	8	9	NA	DK
	Relaxed	1	2	3	4	5	6	7	8	9	NA	DK
	Playful	1	2	3	4	5	6	7	8	9	NA	DK
	Lonely	1	2	3	4	5	6	7	8	9	NA	DK
	Enthusiastic	1	2	3	4	5	6	7	8	9	NA	DK

References:
Geliebter A, Aversa A. Emotional eating in overweight, normal weight, and underweight individuals. Eating Behaviors 2003;3:341-7
Nolan LJ, Halperin LB, Geliebter A. Emotional Appetite Questionnaire. Construct validity and relationship with BMI. Appetite 2010;54:314-9

The following refer to SITUATIONS

**As compared to usual,
do you eat:**

	Much less				The same				Much more		
When under pressure	1	2	3	4	5	6	7	8	9	NA	DK
After a heated argument	1	2	3	4	5	6	7	8	9	NA	DK
After a tragedy of someone close to you	1	2	3	4	5	6	7	8	9	NA	DK
When falling in love	1	2	3	4	5	6	7	8	9	NA	DK
After ending a relationship	1	2	3	4	5	6	7	8	9	NA	DK
When engaged in an enjoyable hobby	1	2	3	4	5	6	7	8	9	NA	DK
After losing money or property	1	2	3	4	5	6	7	8	9	NA	DK
After receiving good news	1	2	3	4	5	6	7	8	9	NA	DK

Please make sure you have answered every question. Thank you.

APPENDIX 7

GLOBAL PHYSICAL ACTIVITY QUESTIONNAIRE

2 The questionnaire

Physical Activity			
Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. [Insert other examples if needed]. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.			

Question	Response		Code
Work			
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD)	Yes No	1 2 If No, go to P 4	P1
In a typical week, on how many days do you do vigorous intensity -activities as part of your work?	Number of days	⌴	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes	⌴⌴ : ⌴⌴ hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD)	Yes No	1 2 If No, go to P 7	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days	⌴	P5
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes	⌴⌴ : ⌴⌴ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned.			
Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. [Insert other examples if needed]			
Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 If No, go to P 10		P7
In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌴		P8
How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌴⌴ : ⌴⌴ hrs mins		P9 (a-b)

2   The questionnaire, Continued

Physical Activity, Continued			
Question	Response		Code
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), [Insert relevant terms].			
Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD)	Yes No	1 2 If No, go to P 13	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days	└─┘	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes	└─┴─┘ : └─┴─┘ hrs mins	P12 (a-b)
Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, volleyball] for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD)	Yes No	1 2 If No, go to P16	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days	└─┘	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes	└─┴─┘ : └─┴─┘ hrs mins	P15 (a-b)
Sedentary behaviour			
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.			
[INSERT EXAMPLES] (USE SHOWCARD)			
How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins		P16 (a-b)

APPENDIX 8

FAGERSTROM TEST OF NICOTINE DEPENDENCE

Fagerstrom Test for Nicotine Dependence

1. How soon after waking up do you have your first cigarette?
a) Within 5 minutes
b) 5-30 minutes
c) 31-60 minutes

2. Do you find it difficult to refrain from smoking in places where it is forbidden? E.g. church, library etc
a) Yes
b) No

3. Which cigarette would you hate to give up?
a) The first in the morning
b) Any other

4. How many cigarettes a day do you smoke?
a) 10 or less
b) 11-20
c) 21-30
d) 31 or more

5. Do you smoke more frequently in the morning?
a) Yes
b) No

6. Do you smoke even if you are sick in bed most of the day?
a) Yes
b) No

Total score: _____

Score: 1-2 = low dependence
  3-4 = low to moderate dependence
  5-7 = moderate dependence
  8+ = high dependence

APPENDIX 9

Repeated measures t-tests to look at Gender with BMI, Smoking Cessation Aid and Eating Behaviours

Repeated measures t-tests to look at Gender with BMI, Smoking Cessation Aid and Eating Behaviours

BMI, Smoking Aid and Eating Behaviours	Men	Women
BMI Baseline and Week 4	p=.253, S.D=.399	p=.211, S.D=1.72
BMI Baseline and Week 12	t=2.90, p=.006, S.D=.614, d=.006	t=2.38, p=.025, S.D=1.16, d=.089
BMI Baseline and 6 months	t=4.08, p<.0001, S.D=.722, d=.096	t=2.92, p=.007, S.D=1.65, d=.016
BMI Week 4 and Week 12	t=2.94, p=.006, S.D=.448, d=.044	p=.758, S.D=1.79
BMI Week 4 and 6 months	t=4.15, p<.0001, S.D=.598, d=.082	p=.224, S.D=2.10
BMI Week 12 and 6 months	t=4.01, p<.0001, S.D=.290, d=.038	t=2.48, p.020, S.D=.831, d=.07
Baseline Smoking Aid	t=30.40, p<.0001, S.D=24.20, d=8.54	t=21.60, p<.0001, S.D=5.75, d=6.996
Week 4 Smoking Aid	t=30.80, p<.0001, S.D=4.92, d=8.67	t=21.95, p<.0001, S.D=5.76, d=7.14
Week 12 Smoking Aid	t=30.61, p<.0001, S.D=4.995, d=8.63	t=22.68, p<.0001, S.D=5.60, d=7.36
6 months Smoking Aid	t=29.96, p<.0001, S.D=5.14, d=8.49	t=23.26, p<.0001, S.D=5.55, d=7.56
Enjoyment of Food	t=-24.39, p<.0001, S.D=2.38, d=5.23	t=-10.72, p<.0001, S.D=4.01, d=3.22
Food Fussiness	t=-29,84, p<0001, S.D=2.64, d=6.30	t=-18.90, p<.0001, S.D=4.09, d=4.66
Emotional Over-Eating	t=-18.20, p<.0001, S.D=3.43, d=4.32	t=-11.25, p<.0001, S.D=3.16, d=2.91
Hunger	t=-21.09, p<.0001, S.D=3.87, d=5.39	t=-11.99, p<.0001, S.D=4.24, d=3.25
Satiety Response	t=-20.96, p<.0001, S.D=2.78, d=4.51	t=-12.74, p<.0001, S.D=3.92, d=3.70
Emotional Under-Eating	t=-19.97, p<.0001, S.D=3.91, d=4.92	t=-14.90, p<.0001, S.D=4.37, d=3.89
Food Responsiveness	t=-20.97, p<.0001, S.D=3.29, d=5.21	t=-11.38, p<.0001, S.D=4.39, d=3.23
Positive Emotional Eating	t=-11.81, p<.0001, S.D=1.78, d=3.14	t=-3.36, p<.0001, S.D=3.14, d=1.15
Negative Emotional Eating	t=-9.28, p<.0001, S.D=1.67, d=2.10	p=.050, S.D=3.06

APPENDIX 10

Post-hoc t-tests for Ethnicity, Weight, Waist Circumference and BMI at different time points

Post-hoc t-tests for Ethnicity, Weight, Waist Circumference and BMI at different time points

Weight, Waist Circumference and BMI	Asian	Non-Asian
Weight Baseline and Week 4	p=.583, S.D=1.15	p=.390, S.D=11.05
Weight Baseline and Week 12	p=.105, S.D=2.33	t=3.25, p=.002, S.D=2.34, d=.08
Weight Baseline and 6 months	t=2.36, p=.026, S.D=3.03, d=.09	t=4.62, p<.0001, S.D=.266, d=.013
Weight Week 4 and Week 12	t=2.06, p=.049, S.D=1.58, d=.04	p=.139, S.D=11.39
Weight Week 4 and 6 months	t=2.85, p=.008, S.D=2.28, d=.08	p=.065, S.D=11.49
Weight Week 12 and 6 months	t=3.08, p=.005, S.D=1.05, d=.04	t=4.91, p<.0001, S.D=.949, d=.05
Waist Circumference Baseline and Week 4	p=.361, S.D=.225	p=.683, S.D=1.55
Waist Circumference Baseline and Week 12	P=.738, S.D=1.98	t=3.08, p=.004, S.D=.94, d=.07
Waist circumference Baseline and 6 months	p=.341, S.D=2.55	t=4.58, p<.0001, S.D=.979, d=.011
Waist Circumference Week 4 and Week 12	p=.809, S.D=1.89	t=2.14, p=.039, S.D=1.65, d=.09
Waist Circumference Week 4 and 6 months	p=.368, S.D=2.47	t=2.88, p=.007, S.D=1.78, d=.13
Waist Circumference Week 12 and 6 months	P=.063, S.D=.093	t=3.05, p=.004, S.D=.52, d=.04
BMI Baseline and Week 4	p=.534, S.D=.474	p=.161, S.D=.953
BMI Baseline and Week 12	p=.135, S.D=.953	t=3.47, p=.001, S.D=.83, d=.08
BMI Baseline and 6 months	p=.073, S.D=1.32	t=4.46, p<.0001, S.D=1.11, d=.02
BMI Week 4 and Week 12	p=.108, S.D=.703	p=.583, S.D=1.44
BMI Week 4 and 6 months	p=.055, S.D=1.07	p=.085, S.D=1.62
BMI Week 12 and 6 months	P=.059, S.D=.50	t=3.28, p=.002, S.D=.63, d=.06

SECTON C3.1

SYSTEMATIC REVIEW

A systematic review examining the conflicting attitudes towards driver safety and legislations amongst drivers with epilepsy

Contents

Section: **Page:**

Abstract

Epilepsy is a condition that affects the brain and people with epilepsy have a tendency to have epileptic seizures, (Epilepsy Action, 2016). Patients with epilepsy can continue to lead normal and healthy lives, including learning to drive, (Epilepsy society, 2016). However, it has been found that some people with epilepsy will continue to drive despite having regular, uncontrolled seizures, (Elliott & Long, 2008). Car accidents that have been caused by epilepsy seizures have led to changes in perceptions about people driving with epilepsy and health professionals feel that it is essential to review the current driving legislations for patients with epilepsy, (Koh et al, 2001). Different perceptions and attitudes towards people driving with epilepsy demonstrates a clear need for a review on this topic to explore how these attitudes could affect the behaviour of people driving with epilepsy.

A comprehensive and systematic review of research carried out in any year was conducted in the databases PubMed, PsychINFO, Science Direct, PROSPERO and the Cochrane Database of Systematic Reviews. In addition, a hand search of reference lists of relevant papers and narrative reviews was done to maximise the potential of finding all relevant papers.

Nine studies met the inclusion criteria that looked at the attitudes of either a professional or physician, a patient with epilepsy or the general public on the ability to drive amongst patients with epilepsy.

One study examined the attitudes of all three areas: patients, professionals or public, within it. However, overall there is clear a difference in opinion over driving with epilepsy. Patients felt that it played a big part of living independently and that although health and safety is important to them, they are willing to drive against legislation to continue travel. The more experienced a physician is within the area of epilepsy, the more lenient they were found to be within the legislation for driving with epilepsy. However, they all felt a responsibility to report anyone driving illegally. It was also found that the more people know and understand

about epilepsy, the more likely they are to feel positive towards the condition and less likely to act negatively towards them.

This review highlights the need for more education about epilepsy and how it can affect an individual to all physicians and members of the public who interact or work with patients with epilepsy. It also shows the importance of finding a way to increase the perceived susceptibility and severity of driving with uncontrolled seizures to maintain road safety. This would hopefully reduce the number of car accidents associated with epilepsy and in turn, reduce the amount of stigma associated with it.

Background

Epilepsy is a condition that affects the brain and means that people with epilepsy have a tendency to have epileptic seizures, (Epilepsy Action, 2016). It is possible for anyone to have a one-off seizure but it does not necessarily mean they have epilepsy; it is only if they have more than one and they are likely to continue to have more, (Epilepsy Action, 2016). The cells in the brain, known as neurons, conduct electrical signals and communicate with each other in the brain using chemical messengers. During a seizure, there are abnormal bursts of neurons firing off electrical impulses, which can cause the brain and body to behave strangely, (NHS Choices, 2016). Epilepsy is estimated to affect over 500,000 people in the UK. This equals to almost one in every 100 people that has symptoms of the condition, (NHS Choices, 2016).

Patients with epilepsy can continue to lead normal and healthy lives, including learning to drive, (Epilepsy society, 2016). However, this changed in 1970 when patients with epilepsy were not allowed to drive, (Maxwell & Leyshon, 1971) and many countries still restrict people with epilepsy from driving, (Seneviratne et al, 1998). The UK legislation now states that each time a person has a seizure, they must surrender their license and be seizure free for 1 year before re-applying, (Epilepsy Society, 2016; Brown et al, 2015) and many studies

suggest that driving for people with epilepsy is very important, (Epilepsy Action, 2015). It has been found that epilepsy seizures can cause some road traffic accidents and fatalities (0.2%), Richards, (2004), however, Popkin & Waller, (1989) found that a group of people with epilepsy had a reported crash rate 1.4 times that of the general driving population. It is thought that these accidents are caused mainly by drivers who do not comply with the regulations and continue to drive despite having seizures, (Matsuura, 2013). Previous research of drivers confirms that the risk of car accidents for people with epilepsy is not significantly higher than for those with other chronic medical conditions, such as heart disease, (Krumholz, 2009).

Elliott & Long, (2008), looked at how likely patients with epilepsy are likely to continue to drive when told not to and found that 19% of patients were dishonest about their seizures in order to continue driving and 26% report having a car accident due to a seizure. It was also found by Bautista & Wludyka, (2006) that 20% of patients with poorly controlled seizures continued to drive. A considerable proportion of patients continue driving despite uncontrolled seizures, (Chen et al, 2014) and it was found that the major reason around 20% of patients with poorly controlled seizures continued to drive was due to their work, (Bautista & Wludyka, 2006). More than one out of three (35.8%) patients were driving when they knew they should not, (Zis et al, 2014) and it was found that 23.8% of people with epilepsy were illegally driving , 11.86% were disobedient refusing to obey the law, and 8.9% were defiant and knew the law, (Tatum et al, 2012). However, car accidents that are caused by seizures are not always due to an individual with epilepsy driving illegally, their epilepsy may have been under control and something out of their control could have caused them to have a seizure, (Bautista & Wludyka, 2006).

Car accidents that have been caused by epilepsy seizures have led to perceptions from other individuals about people driving with epilepsy and many doctors feel that it is essential to review the current driving legislations for patients with epilepsy, (Koh et al, 2001). There has been found to be a substantial number of negative attitudes in the public towards people with epilepsy and has been found to cause discrimination against people who have epilepsy,

(Myeong-Kyu et al, 2002; Caveness & Gallop, 1980). This is thought to be due to lack of knowledge on the condition or from false beliefs about the effects of the condition, (Chung et al, 1995). These negative attitudes have led to people feeling that people with epilepsy should not be driving and discriminated against, (Myeong-Kyu, 2002). It has been shown that driving is an important part of people with epilepsy's lives, especially when epilepsy is something out of their control and they feel it is not their fault, however, it is also important to keep safety levels as high as possible, (Epilepsy Action, 2015). Non-neurologists and physicians will have more restrictive beliefs and lack of knowledge regarding patients with epilepsy driving compared with neurologists and it was found in a set of Australian doctors that neurologists were more lenient in legislation for driving than general practitioners due to their more in depth knowledge of the condition, (Beran et al, 2007).

Previous research highlights the need for cooperation between the driving authorities and the doctors of the epilepsy society for further amendment of the regulations as well as the importance of reducing the stigma against people with epilepsy, (Inoue et al, 2004). It is thought that there are differences in opinions between health professionals, people with epilepsy and people without epilepsy, (Koh et al, 2001; Beran et al, 2007; Tatum et al, 2012). This shows the importance of reviewing this topic and looking at the different perceptions and attitudes towards people driving with epilepsy as it is important to look into the effect these opinions can have. It is clear that some people with epilepsy may continue to drive, despite having regular seizures, (Elliott & Long, (2008), however, the people who drive legally with seizures under control, should not be discriminated against because of this, (Myeong-Kyu, 2002). The results of this review could assist the understanding of how attitudes can affect people with epilepsy but also pre-empt possible prevention methods for dangerous driving with epilepsy in the future, (Elliot & Long, 2008). There seems to be a gap existing in appropriate prevention techniques regarding driving with epilepsy when it is not safe to do so, (Drazkowski et al, (2010) and this could be affected by others attitudes, (Myeong-Kyu, 2002). By comparing between the different opinions and attitudes towards driving with epilepsy, it can then be possible to reduce conflict and discrimination and increase driver safety, (Inoue et al, 2004).

3.1a Define topic and search parameters

Review objective

The specific question addressed in this review was:

- What do we know about conflicting views of different individuals on people driving with epilepsy?

Methods

Eligibility Criteria

To fulfil the purpose of this review, studies were included if they met the following criteria:

- Studies investigating patient's perspectives of driving with epilepsy

- Studies investigating professional's perspective of driving with epilepsy
- Studies investigating the perspectives of people without epilepsy on driving with epilepsy
- Studies conducted in any year
- Full length studies published in peer review journals

- Primary studies, using both retrospective or prospective design and either quantitative and/or qualitative design

Studies were excluded if:

- The primary focus was not driving with epilepsy - to be included the study must include epilepsy and driving and will be excluded if they do not.

- It must also include the perceptions or beliefs of either patients with epilepsy, health professionals or people without epilepsy on driving.
- All studies will include patients with epilepsy over the age of 17 due to driving being a requirement; therefore all studies about children with epilepsy will be excluded.
- It was a commentary, editorial or case study

There were no restrictions on variables such as culture, age, occupational class or education. Studies not written in English would also be included and translated.

3.1b Conduct a search using appropriate databases and sources

Search Strategy

The search strategy involved systematically reviewing subject specific databases PubMed, PsychINFO, Science Direct, PROSPERO and the Cochrane Database of Systematic Reviews. Epilepsy Action, Epilepsy UK and Epilepsy Society were also checked. Each database was searched using the following search terms and combined with Boolean operators:

1. Perceptions

2. Attitudes

3. Belief

4. Thoughts

5. Judgement

6. Judgment

7. #1 OR #2 OR #3 OR #4 OR #5 OR #6

8. Epilepsy

9. Seizures

10. Convulsions

11. Absences

12. Fits

13. #8 OR #9 OR #10 OR #11 OR #12

14. Driving

15. Driver

16. Drive

17. Vehicle

18. Car

19. Machinery

20. Moving

21. #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20

22. #7 AND #13 AND #21.

The search strategy aimed to maximise the potential of finding all relevant papers. In addition to this search strategy, a hand search of the reference list of relevant papers was performed and the search was conducted in July and August 2016.

Selection Process

All titles and abstracts retrieved were screened for potential eligibility by one reviewer. The full text of potential articles was then examined by the same reviewer to determine eligibility for inclusion in the review and this was checked by a second reviewer. All studies were looking at driving and epilepsy with the attitudes or perceptions of either/and health professionals, patients with epilepsy and the general public. Data collected from each study included authors(s), country, year published, aim, sample size, study design, key findings and suggestions made by authors (see Table 2, page 227).

Quality Audit

The quality of the studies were assessed using the Quality Assessment tool for Quantitative studies as all papers included in this review employed a quantitative approach. Quality was assessed using the six components of the assessment tool, selection bias, study-design confounders, blinding, data-collection method, withdrawals and dropouts. The studies were then rated as strong, medium or weak for each section according to the Assessment Tool and

were then given an overall score of strong, medium or weak depending on the results. As this review was looking at conflicting attitudes towards driving with epilepsy, a meta-analysis would not provide an accurate picture to answer to this question as it will not compare the different perspectives. To answer the review question, it would be necessary to complete three separate meta-analyses to look at the different perspectives of patients, professionals and general public. This would reduce the number of papers used in each analysis and would mean the results would be weak. As there is a high heterogeneity across studies and the global rating of these studies are weak, a meta-analysis is thought to provide no significant results, (Ioannidis et al, 2008). Following this, eight of the nine studies included in this review either used descriptive statistics, (Seneviratne, 1998; Dickey et al, 1993; Beran, 1997; Vogtle, 2007) or frequency data, (Okumura, 2013; Okumura, 2014; Okumura, 2015; Okumura. 2016) which also shows the weakness of the methodology and analysis in that a meta-analysis would provide no significant results.

As shown in Table 1, (page 225), once completed the quality assessment tool for all the included studies, seven out of nine included studies received a global rating of weak with Vogtle et al, (2007), receiving ratings of strong and Dickey et al, (1993), receiving a rating of moderate. All of the studies, except one, were given a rating of weak for the data collection due to a lack of reliable or valid questionnaires. The one study with a strong global rating used more reliable or valid questionnaires for their data collection and were rated as moderate for this. Five out of the nine included studies were rated as weak for selection bias as the response rate was low and the sample was not representative of the target audience. The two studies that were rated as strong or moderate for their global rating, were also better at reporting these results and were rated as moderate for selection bias. All nine studies were rated as strong or moderate for their study design as they all reported using a random sample or case-control/cohort and all reported this appropriately. All studies were also rated as strong or moderate for confounding variables as they all controlled some, if not most of the differences between participants. There were four studies that were rated weak for blinding because the researchers were aware of the groups the participants were in but the rest were rated as moderate or strong. For most studies it was not applicable for withdrawal or dropout

rates due to it being a one off questionnaire but there was one study rated as strong for this, Seneviratne et al, as it reported a high response rate and one study that was rated weak, Elliott & Long, (2008), as it reported a particularly low response rate.

Results

The search strategy produced 4441 potentially relevant papers (see Figure 1, page 224 for selection process), 1610 duplicates were removed from the list, leaving 2831 titles and abstracts to be screened, 2822 were excluded because the title or abstracts appeared to be about topics outside of the review's focus and one paper only the abstract is available. Nine full text papers were retrieved and examined by one reviewer to determine eligibility to be included in the review, all of which were included as they examined attitudes towards people driving with epilepsy and met the other aspects of the inclusion criteria. A manual search of the references of the 9 studies for inclusion, in addition to narrative commentaries on driving with epilepsy, revealed no further studies for inclusion. Therefore 9 studies met the inclusion criteria and were included in this systematic review.

Figure 1: Flow chart of the selection process

Studies identified through database searching

(n=4441)

Duplicates removed
(n=1610)

Number of titles/abstracts screened (n=2831)

Exclusions of irrelevant titles and abstracts

(n=2822)

Records identified through hand searching

(n=0)

Retrieval of full articles to assess relevance (n=9)

Full text articles excluded

(n=0)

Studies included in this review

(n=9)
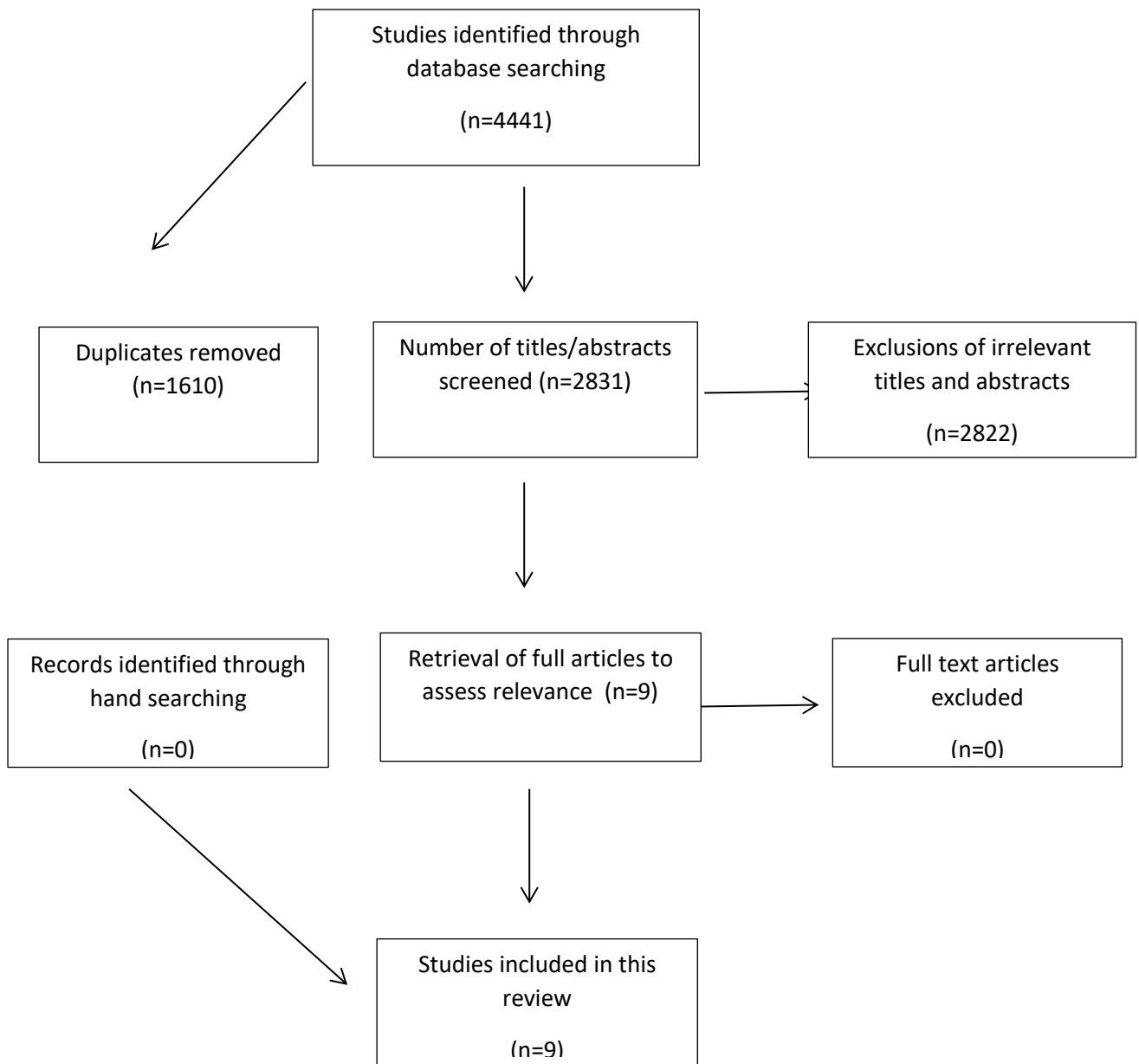
Table 1: Quality assessment results for included studies

Study	Selection Bias	Study design	Confounders	Blinding	Data Collection Method	Withdrawal and Dropouts	Global Rating
Seneviratne et al, (1998)	Moderate	Strong	Moderate	Weak	Weak	Strong	Weak
Elliott & Long, (2008)	Weak	Moderate	Strong	Strong	Moderate	Weak	Weak
Okumura et al, (2016)	Weak	Moderate	Strong	Moderate	Weak	N/A	Weak
Okumura et al, (2014)	Weak	Moderate	Moderate	Moderate	Weak	N/A	Weak
Beran, (1997)	Moderate	Moderate	Strong	Weak	Weak	N/A	Weak
Vogtle et al, (2007)	Moderate	Strong	Strong	Strong	Moderate	N/A	Strong
Okumura et al, (2015)	Weak	Moderate	Moderate	Weak	Weak	N/A	Weak
Okumura et al, (2013)	Weak	Moderate	Moderate	Weak	Weak	N/A	Weak
Dickey et al, (1993)	Moderate	Strong	Moderate	Strong	Weak	N/A	Moderate

As summarised in Table 1, (page 225), all studies explored the perceptions and attitudes related to driving with epilepsy. All studies used a quantitative approach by using questionnaires asking either patient with epilepsy, health professionals and physicians and/or the public to respond with their opinions on the topic, mostly responding 'yes' or 'no' to each question.

There was only one study, Seneviratne et al, (1998), that compared the attitudes towards driving with epilepsy between all three participant types – health professionals, patients and the public by comparing the perceptions of danger of driving and their thoughts on the current and future legislations for driving with epilepsy.

There were four studies, all by Okumura et al, (2013, 2014, 2015, 2016), there was a total sample of 2359, however these were all by the same authors, in the same setting and using the same sample. It was found that nearly all of the participants from the public thought driving with epilepsy is dangerous and believe they should not be driving but they mostly agreed that they would drive if they had epilepsy and would not report it. Following media exposure to epilepsy and driving, the public increased positivity towards it and felt they should not be punished.

There were two studies looking at the perceptions of just the patients with epilepsy and how they perceive driving, Elliott & Long, (2008) and Dickey et al, (1993), with a total sample of 504 and patients were found to feel they should be able to drive to increase independence, even if they had had a car accident from a seizure. Some of the epilepsy patients were also found to be driving illegally, don't agree with the current laws and it was seen that as restrictions increase, compliance decreases.

There were two studies which looked specifically at the professionals' perspective of driving with epilepsy with a total sample of 472, (Dickey et al, 1993; Beran, (1997). It was found that many doctors felt that driving with epilepsy is dangerous, restrictions are needed but rarely asked their patients if they drive. Doctors were found to feel that they have a responsibility to report anyone driving against legislation but not responsible for the repercussions this may bring. A specialist neurologist in epilepsy is more likely to agree a driving license and the less epilepsy patients a GP saw, the more they opposed a license. This shows that the more a doctor knows about epilepsy, the more likely they are to think positively about driving.

Table 2: Studies included in review

Study	Research aim	Sample	Design	Data analysis	Key findings	Suggestion
Seneviratne et al, (1998) Sri Lanka	Look at different attitudes of driving with epilepsy	Patients - N=187, Doctors – N=244 Public – N=672	Questionnaires were given to all participants to complete	Descriptive statistics	89.3% physicians believe driving with epilepsy is dangerous 91.8% thought restrictions were necessary Only 13.1% asked their epilepsy patients if they drive 99.7% public believe driving with epilepsy is dangerous 97% should be strict regulations 74.8% believe they should not be driving 94% if they had epilepsy, would not disclose it and continue to drive 95.1% of epilepsy patients – minimal restrictions to increase independence Most accepted it as dangerous	To use attitudes of different groups when designing legislations Doctors to balance independence and safety
Elliott & Long, (2008) USA	To analyse health behaviour attitudes and beliefs in epilepsy to create effective counseling	Patients – N=213, 144 female, 66 male	46-item questionnaire, gathered in 3 ways – posted, given in epilepsy clinic, contacted via email	ANOVA - to compare differences in driving behaviour for demographic variables Logistic regression to predict	88% patients with epilepsy think good health is important and 99% important to improve safety 27% people had car accident due to seizure and had higher perceived susceptibility/severity and lower barriers to changing Lied about driving – more likely to have worse attitudes toward driving and higher barriers to change	Supporting the need to address health behaviour constructs with counselling epilepsy. Enhancing perceived susceptibility and severity may help change behaviours. Improve awareness of resources and

					7 predictors of behaviour – Caucasian drivers more likely to lie Employed more likely to drive Higher susceptibility/severity of accidents, more likely to lie Higher barriers in drivers	transportation services. Overcoming barriers to change is most difficult – need to inspire.
Dickey et al, (1993) Belfast	Assess attitudes and practices of patients with epilepsy attending a seizure clinic	N=104 patients attending a seizure clinic in Belfast	Questionnaires were given during appointments at the seizure clinic	Descriptive statistics	28% participants eligible to drive during study, 3 patients were driving illegally. 8 had driven illegally before, admitted being told not to but did anyway. 33% could cite the law, but only 41% agree with it. Patients driving legally – only 57% had notified DVLC. Legal restrictions have not helped prevent accidents as compliance decreases	Modification of current regulations might improve compliance and satisfaction among drivers with epilepsy without threat to road safety.
Okumura et al, (2016) Japan	Compared attitudes towards epilepsy and driving before and after exposure to media controversi	N= 79 students in 2012 before media controversi es N= 90 in 2014 after media	Questionnaires given to students studying Health and sport science	Chi square test to compare results from two different dates	Participants became more familiar with epilepsy following media coverage. Positive responses towards epilepsy was higher after media coverage and attitudes towards driving licenses with epilepsy did not differ – 25% should have a license, 37% should not be punished for accidents	Familiarity and attitudes towards epilepsy improved. Increase in punishment for epilepsy drivers if accident caused. Used to help improve public understanding and

	es of car accidents	controversies – Different participants				attitudes towards epilepsy and driving license.
Okumura et al, (2014) Japan	Comparing attitudes towards epilepsy after media coverage of car accidents	N=79 Men = 44 Female = 35 80% knew about epilepsy (group 1) 20% didn't (group 2)	Questionnaire on familiarity and attitudes towards epilepsy and driving	Chi-squared test was used to compare the 2 groups- who know about epilepsy and those who don't know.	25% participants in both groups think that people with epilepsy shouldn't have a license. However, both groups felt that punishment should not to be given as a result of an accident. Negative responses to epilepsy were rare. Media coverage did not strongly affect attitude towards driving and epilepsy	Insufficient promotion of the correct information on the relationship between driving and epilepsy. Future studies to focus on the effects of media on knowledge, attitudes and perceptions of epilepsy in public.
Okumura et al, (2015) Japan	To evaluate changes in attitudes of non-medical students about epilepsy and driving – before, during and after media	N=838 student responses, N=310 for before, N=291 for during, N=237 for after	Questionnaires given out prior to a lecture on Health and Sport Science	Chi squared tests were used to compare the rates of positive responses between the 3 time periods. The Bonferroni correction	Rates of positive responses increased even after media coverage. Rates of students understanding epilepsy increased and associated with a decrease in negative response. Improved attitudes did not alter after media coverage reduced. More people knew someone with epilepsy after media coverage – can decrease negativity.	The familiarity of epilepsy is increasing in Japan. Distribution of correct knowledge via media can improve people's attitudes towards epilepsy. Further research needed to decide appropriate methods for

						distributing knowledge
	coverage of car accidents in epilepsy			was also applied		
Okumura et al, (2013) Japan	Compared attitudes towards epilepsy and driving before and after media coverage on car accidents	N=601, N=310 before accident and N=291 after accident	Questionnaires before a lecture on basic knowledge of neurological conditions	Chi squared tests compare the results before and after	Attitudes and familiarity towards epilepsy was improved after media coverage – indicates the importance of spreading correct information on epilepsy	More research needed on a wider public with various backgrounds Improved attitudes towards epilepsy and driving after media coverage – shows importance of increasing public education on epilepsy.
Beran, (1997) Australia	Comparing attitudes between different physicians on driving with epilepsy	N= 19, 4 were not medically trained	Survey given at the First Academic Seminar of the Australian College of Legal Medicine (ACLM)	Descriptive statistics	73.7% physicians believe doctors should report patients driving who may pose a risk 73.7% believe that doctors are not responsible for lost income due to accidents from unreported drivers It is thought there is no absolute answer but safer to report non-compliant driver	Doctors should report non-compliant patients when driving, if unsafe to protect patient and others despite confidentiality breach.
Vogtle et al, (2007) USA	Comparing attitudes and opinions	N=209, family GP – 44%, internal	Faxed questionnaires to all physicians	Descriptive statistics and X*2 analysis were used to	No differences between groups on definition of seizure control Family GPs were more likely to oppose license to uncontrolled seizures and neuro	Physicians fail to understand/support/ interpret driving restrictions – may

	regarding driving in epilepsy between different physicians and neurologists	medicine – 27%, neurologists – 24%		compare physicians and neurologists	Also more likely to agree to set minimum seizure free period before driving Less likely to have patients report seizure related accidents than neuro Physicians with less than 10 epilepsy patients were more likely to oppose license and support mandatory reporting to motor vehicle departments Response bias and lack of respondents	lead to unnecessary restrictions and can affect QOL. Significant effort in promotion of education of physicians in driving regulations needed.

3.1c Summarise findings from the review.

Summary of findings

The results of this review produced mixed findings, however all studies identify that more information and promotion is needed on the topic of epilepsy and driving, as summarised in Figure 2, page 232.

Figure 2: Summary of findings

- 9 quantitative studies were included that explored the perceptions and attitudes of different individuals on people with epilepsy driving.
- Seven studies had a global quality assessment rating of weak; one study had strong rating and one moderate.
- The results show there are conflicting perceptions and messages around epilepsy and driving but the more knowledge and understanding about epilepsy that people have, the more positive they feel about them driving.
- Doctors who were more experienced in epilepsy understood it more and were more likely to be positive about driving.
- Patients felt that they were already restricted enough and not driving affected their independence. It was also found that the more the restrictions increase, the compliance decreases.
- The more the general public understood about epilepsy or more familiar they were with it, the more likely they were to feel positive about it and that they should not be punished.

Nine studies met the review criteria, highlighting not only a shortage of research that has focused specifically on conflicting attitudes of people with epilepsy driving, but also the difficulty in drawing any firm conclusions in this topic area. However, different attitudes were found within the different population groups: some people felt that driving with epilepsy is dangerous and restrictions are necessary, (Seneviratne et al, 1998; Elliott & Long, 2008; Beran, 1997) but others found that restrictions have not helped to increase safety (Dickey et al, 1993; Vogtle et al, 2007) but information and experience with epilepsy seemed to be the main contributing factor.

Discussion

This review highlighted clear differences in feelings and attitudes towards people with epilepsy driving. From the patients' perspective, it is essential for them to continue driving to increase their independence and to be able to continue working, even though they are aware it is dangerous. Health and safety is very important to patients with epilepsy, however there were still patients driving illegally and a quarter of the drivers with epilepsy had had an accident due to a seizure. Despite this result, there were still found to be many patients with epilepsy lying about driving illegally and these were found to have higher barrier to change compared with drivers who were honest or had a previous accident as a result of a seizure. This could be an important area to look for ways to increase perceived susceptibility/severity of an accident while driving when seizures are uncontrolled or reducing the barriers to change. Unfortunately, changing the legal restrictions with consideration only seems to increase illegal driving as compliance decreases, (Dickey et al, 1993).

The views of the public's on driving with epilepsy changed after exposure to information about epilepsy, positive responses increased the more familiar they became to epilepsy. Even though media coverage was not found to significantly affect attitudes towards driving and epilepsy, positive responses did increase following media exposure. Even though the validity of the results of these studies is low, (Okumura et al, 2013; Okumura et al, 2014; Okumura et al, 2015; Okumura et al, 2016) due to all studies being from the same authors and same sample of participants, it can still show the need for education on epilepsy to the public to reduce stigma and negative feelings felt towards people with epilepsy, (Inoue et al, 2004; Myeong-Kyu, 2002).

When reviewing the studies on the attitudes of professionals and physicians on people with epilepsy driving, most believe that it is dangerous and restrictions are necessary, however only a small amount of professionals were found to ask their epilepsy patients if they drive. Many doctors feel they should report patients driving who may pose a risk and that they do not feel responsible for lost income due to accidents from unreported drivers. There was a big difference in opinions between family GPs who were more likely to oppose license to patients with uncontrolled seizures than neurologists and are also more likely to agree to set minimum seizure free period before driving. However, family GPs were found to be less

likely to have patients report seizure related accidents than neurologists and GPs with less than 10 epilepsy patients were more likely to oppose license and support mandatory reporting to motor vehicle departments. This again shows a lack of information, education and experience with epilepsy patients, (Beran et al, 2007; Vogtle et al, 2007) and how this can increase negativity towards the condition.

It is important to patients with epilepsy to be able to continue living independently and to be able to travel independently for both work and personal life. Following this, it is important that they are able to do this but also remain as safe as possible and for others around them to also remain safe. The importance of legislations to be written to maintain patients' independence but also the safety of everyone on the roads is high; however this may be a challenge for physicians with such a difference in opinions. This highlights the need for experienced physicians in the area of epilepsy to have the most input into the legislations and to promote education to others. It is also interesting to note that the more exposure people have to epilepsy, the more accepting they are of the condition and this could be an important door into reducing the stigma attached to it, (Myeong-Kyu et al, 2002; Caveness & Gallop, 1980).

All nine studies used one off questionnaires to collect the information from participants about their attitudes towards driving with epilepsy and only two of these studies reported using valid or reliable methods. Lack of reliable and valid tools makes it difficult to compare studies and to use measurement tools in other studies. This also reduces the significance a meta-analysis could give in a review with these tools. However, there were two studies that used more reliable tools, Elliott & Long, (2008) used Driver Perceptions and Practices Questionnaire (DPPQ), developed by Stavley and Owsley and published in the Journal of

Health Psychology, (Stavley & Owsley, 2000) and Vogtle et al, (2007) developed their own measurement tool using previous reviews and neurologist input. Despite this, all studies are limited due to the self-reported nature of measurement, leaving them open to many kinds of bias, for example, selection bias or response bias. The survey design studies are also limited due to non-response and low response rates, making generalisation difficult.

Following this, a criticism that could be identified of this systematic review is that no meta-analysis was performed. However, it was found that by completing a meta-analysis for this review, it would not result in any meaningful data or conclusions. As three separate analysis' would need to be completed, one for each category, the studies included in each category were limited and weak in both methodological quality and statistical analysis', (Borenstein et al, 2009), so it was decided not ideal to do them.

The original research question of 'What do we know about conflicting views of different individuals on people driving with epilepsy?' can be discussed by answering the four following questions:

1.Do health professionals perceive driving with epilepsy as a positive or negative lifestyle choice?

It was found that the health professionals who work closely with epilepsy patients are more likely to feel positive about driving with epilepsy than general practitioners who rarely see them. It seems that the more they understand about the condition and how it can affect a person's life, the more likely they are to think positively about driving with epilepsy. This shows how a lack of knowledge and understanding can affect perceptions about driving with epilepsy and change what they might recommend to different patient's.

2.Do people without epilepsy perceive driving with epilepsy negatively?

The research from this review shows that the more the public is exposed to epilepsy and understand the topic, the more likely they are to perceive the condition and driving as positive. This is like the health professionals in that the more experience they have with the condition and the level of personal exposure they have to epilepsy, determines their perceptions of driving with epilepsy.

3.What makes patients with epilepsy continue to drive against legislation?

The research shows that patients with epilepsy continue to drive against legislation due to wanting to increase their independence, especially if they need to drive to continue working. It was also found that patients with epilepsy did not agree with the current laws on driving with epilepsy and felt that they should be able to drive to remain independent.

4.What recommendations can be made?

The previous questions show the importance of increasing knowledge, experience and understanding of epilepsy can help to reduce negativity towards the condition and people driving with it. Both the public and the health professionals showed significant improvements in perceptions the more experience or knowledge they had with the condition. Following this, this shows there is a need for future research to focus on both categories (public and health professionals) to increase education about epilepsy who are not experienced in epilepsy but working with patients with epilepsy, especially if they contribute to the legislations for driving with epilepsy. Since the methodological quality of the studies was low and there are a minimal number of studies for each category, it shows that more quality research is needed in this area to increase validity. Another important prospect for future research is to look at ways of increasing the perceived severity of a car accident caused by an uncontrolled seizure in epilepsy patients or trying to reduce the barriers to reduce the number of people driving illegally and against legislation. This could be effectively achieved through health promotion materials to increase perceived susceptibility of accidents when driving against legislations, alongside discussions in attendance at epilepsy clinics and reviews.

The aim of this review was to examine the conflicting attitudes towards driver safety and legislations amongst drivers with epilepsy. This review also aimed to highlight any issues that may arise as a result of the conflicting attitudes and provide recommendations for future research. Although the results of this review show that there is potential for more quality research in this area with educating the public and health professionals on the topic of epilepsy, as well as educating patients on the risks of driving when having seizures, the review is limited by the methodological quality of the studies included.

References

Bautista, R. E. D., & Wludyka, P., (2006). Driving prevalence and factors associated with driving among patients with epilepsy. *Epilepsy and Behavior.* 9(4), 625-631.

Beran, R. G., (1997). Professional privilege, driving and epilepsy, the doctor's responsibility. *Epilepsy Research.* 26, 415-421.

Beran, R. G., Ainley, L. A. E., & Beran, M. E., (2007). Opinions, attitudes and practices of Australian neurologists with regard to epilepsy and driving. *Internal Medicine Journal.* 37(4), 251-57.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R., (2009). *Introduction to Meta-Analysis.* UK; Wiley & Sons (2009).

Brown, J. W. L., Lawn, N. D., Lee, J., & Dunne, J. W., (2015). When is it safe to return to driving following first-ever seizure? *Journal of Neurological Neurosurgery Psychiatry.* 86(6), 60-64.

Caveness, W. F., & Gallup, G. H., (1980). A survey of public attitudes toward epilepsy in 1979 with an indication of trends over the past thirty years. *Epilepsia.* 21, 509-18.

Chen, J., Yan, B., Lu, H., Ren, J., Zou, X., Xiao, F., Hong, Z., & Zhou, D., (2014). Driving among patients with epilepsy in West China. *Epilepsy Behaviour.* 33, 1-6.

Drazkowski, J. F., Neiman, E. S., Sirven, J. I., McAbee, G. N., & Noe, K. H., (2010). Frequency of physician counseling and attitudes toward driving motor vehicles in people with epilepsy: Comparing a mandatory-reporting with a voluntary-reporting state. *Epilepsy and Behavior.* 19(1), 52-54.

Dickey, W., & Morrow, J. I., (1993). Epilepsy and driving: attitudes and practices among patients attending a seizure clinic. *Journal of the Royal Society of Medicine.* 86, 566-68.

Elliott, J. O., & Long, L., (2008). Perceived risk, resources, and perceptions concerning driving and epilepsy: A patient perspective. *Epilepsy and Behavior.* 13, 381-386.

Epilepsy Action, (2016). What is Epilepsy? https://www.epilepsy.org.uk/info/what-is-epilepsy. (Accessed: 12/7/16)

Epilepsy Action, (2015). Epilepsy and Driving. https://www.epilepsy.org.uk/campaigns/epilepsy-week/2013/driving. (Accessed: 24/8/16).

Epilepsy Society, (2016). What is Epilepsy? https://www.epilepsysociety.org.uk/what-epilepsy#.V4UAGVL6vcs (Accessed: 12/7/16)

Ioannidis, J. P. A., Patsopoulos, N. A., & Rothstein, H. R., (2008). Reasons or excuses for avoiding meta-analysis in forest plots. *BMJ.* 336, 1413-1415.

Inoue, Y., Ito, M., Kurihara, M., & Morimoto, K., (2004). Epilepsy and driving in Japan. *Epilepsia.* 45(12), 1630-5.

Koh, S. H., Chung, B., Kim, H. Y., Kim, J. H., Kim, S. H., Kim, S. T., Kim, M. H., Lee, K. Y., Lee, Y. J., Yu, H. J., & Noh, H. J., (2001). Epilepsy and Driving. Journal of *Korean Epilepsy Society.* 5(1), 70-74.

Matsuura, M., (2013). Epilepsy and Driving. *Brain and Nerve.* 65(1). 67-75

Maxwell, R. D. H., & Leyshon, G. E., (1971). Epilepsy and Driving. *British Medical Journal.* 3,(12).

Myeong-Kyu, K., In-Kyu, K., Byeong-Chae, K., Ki-Hyun, C., Sei-Jong, K., & Jai-Dong, M., (2002). Positive trends of public attitudes toward epilepsy after public education campaign among rural Korean residents. *Journal of Korean Medical Science.* 18, 248-54.

National Collaborating Centre for Methods and Tools (2008). Quality Assessment Tool for Quantitative Studies. Hamilton, ON: McMaster University. (Updated 13 April, 2010) Retrieved from http://www.nccmt.ca/resources/search/14. (Accessed: 11/10/16).

NHS Choices, (2016). Epilepsy. http://www.nhs.uk/conditions/Epilepsy/Pages/Introduction.aspx. (Accessed: 12/7/16).

Okumura, A., Nakazawa, M., Abe, S., & Shimizu, T., (2013). Attitude toward epilepsy after media coverage of car accidents related to persons with epilepsy in Japan. *Epilepsy & Behavior.* 27, 264-266.

Okumura, A., Abe, S., Nakazawa, M., & Shimizu, T., (2014). Is attitude toward epilepsy and driving affected by media coverage? *Pediatrics International.* 56, 759-762.

Okumura, A., Nakazawa, M, Abe, S., Ikeno, M., Igarashi, A., & Shimizu, T., (2015). Sustained improvement of attitudes about epilepsy following a reduction in media coverage of car accidents involving persons with epilepsy. *Epilepsy & Behavior.* 48, 41-44.

Okumura, A., Abe, S., Nakazawa, M., Ikeno, M., Igarashi, A., Takasu, M., & Shimizu, T., (2016). Attitudes towards driver's licenses to people with epilepsy: 2012-2014. Doi: 10.1111/ped.13104

Popkin, C. L., & Waller, P. F., (1989). Epilepsy and driving in North Carolina: an exploratory study. *Accident, Analysis and Prevention.* 21(4), 389-93.

Richards, K. C., (2004). The risk of fatal car crashes in people with epilepsy. *Neurology.* 63(6).

Seneviratne, S. L., Gunatilake, S. B., Adhikari, A. A., & De Silva, H. J., (1998). Driving and Epilepsy in Sri Lanka. *Seizure.* 7(4), 305-8.

Stalvey, B. T, & Owsley C., (2000). Self-perceptions and current practices of high-risk older drivers: implications for driver safety interventions. *Journal of Health Psychology.* 5:441–56

Sunmonu, T. A., Komolafe,M. A., Afolabi, O. T., Ogunrin, O. A., (2013). Driving and epilepsy: perspectives of patients with epilepsy in South Western Nigeria. *Abstracts/Journal of the Neurological Sciences.* 333, e1-e64.

Vogtle, L. K., Martin, R., Foushee, H. R., Faught, R. E., (2007). A comparison of physicians' attitudes and beliefs regarding driving for persons with epilepsy. *Epilepsy and Behavior.* 10, 55-62.

Zis, P., Siatouni, A., Kimiskidis, V.K., Verentzioti, A., Kefalonitis, G., Triantafyllou, N., & Gatzonis, S., (2014). Disobedience and driving in patients with epilepsy in Greece. *Epilepsy Behaviour.* 41, 179-82.

Appendix 1

Quality Assessment Tools For All 9 Papers

Paper ①   Weak

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP
Effective Public Health Practice Project

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 - 100% agreement
2. 60 – 79% agreement
3. less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before and after))
6. Interrupted time series
7. Other specify _____
8. Can't tell

Was the study described as randomized? If NO, go to Component C.
  No   Yes

If Yes, was the method of randomization described? (See dictionary)
  No   Yes

If Yes, was the method appropriate? (See dictionary)
  No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

1 Yes (circled)
2 No
3 Can't tell

The following are examples of confounders:

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2 (circled)	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

1 Yes (circled)
2 No
3 Can't tell

(Q2) Were the study participants aware of the research question?

1 Yes (circled)
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3 (circled)

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1 Yes
2 No
3 Can't tell (circled)

(Q2) Were data collection tools shown to be reliable?

1 Yes
2 No
3 Can't tell (circled)

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3 (circled)

2

F) **WITHDRAWALS AND DROP-OUTS**

(Q1) **Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**
1 Yes
2 No
3 Can't tell
4 Not Applicable (i.e. one time surveys or interviews)

(Q2) **Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) **INTERVENTION INTEGRITY**

(Q1) **What percentage of participants received the allocated intervention or exposure of interest?**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell

(Q2) **Was the consistency of the intervention measured?**
1 Yes
2 No
3 Can't tell

(Q3) **Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?**
4 Yes
5 No
6 Can't tell

H) **ANALYSES**

(Q1) **Indicate the unit of allocation (circle one)**
community   organization/institution   practice/office   individual

(Q2) **Indicate the unit of analysis (circle one)**
community   organization/institution   practice/office   individual

(Q3) **Are the statistical methods appropriate for the study design?**
1 Yes
2 No
3 Can't tell

(Q4) **Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**
1 Yes
2 No
3 Can't tell

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

		STRONG	MODERATE	WEAK	
A	**SELECTION BIAS**	1	(2)	3	
B	**STUDY DESIGN**	STRONG (1)	MODERATE 2	WEAK 3	
C	**CONFOUNDERS**	STRONG 1	MODERATE (2)	WEAK 3	
D	**BLINDING**	STRONG 1	MODERATE 2	WEAK (3)	
E	**DATA COLLECTION METHOD**	STRONG 1	MODERATE 2	WEAK (3)	
F	**WITHDRAWALS AND DROPOUTS**	STRONG (1)	MODERATE 2	WEAK 3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
(3)	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No   Yes

If yes, indicate the reason for the discrepancy

1   Oversight
2   Differences in interpretation of criteria
3   Differences in interpretation of study

Final decision of both reviewers (circle one):

1   STRONG
2   MODERATE
3   WEAK

4

Paper ②

Weak

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP

Effective Public Health Practice Project

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?
1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?
1. 80 - 100% agreement
2. 60 – 79% agreement
3. less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design
1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before and after))
6. Interrupted time series
7. Other specify _____
8. Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

1 Yes
2 No *(circled)*
3 Can't tell

The following are examples of confounders:

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1 *(circled)*	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

1 Yes
2 No *(circled)*
3 Can't tell

(Q2) Were the study participants aware of the research question?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1 *(circled)*	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1 Yes *(circled)*
2 No
3 Can't tell

(Q2) Were data collection tools shown to be reliable?

1 Yes
2 No *(circled)*
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2 *(circled)*	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?
  1 Yes
  2 No
  3 Can't tell
  4 Not Applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).
  1 80 -100%
  2 60 - 79%
  3 less than 60%
  4 Can't tell
  5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?
  1 80 -100%
  2 60 - 79%
  3 less than 60%
  4 Can't tell

(Q2) Was the consistency of the intervention measured?
  1 Yes
  2 No
  3 Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
  4 Yes
  5 No
  6 Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)
  community   organization/institution   practice/office   individual

(Q2) Indicate the unit of analysis (circle one)
  community   organization/institution   practice/office   individual

(Q3) Are the statistical methods appropriate for the study design?
  1 Yes
  2 No
  3 Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?
  1 Yes
  2 No
  3 Can't tell

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

		STRONG	MODERATE	WEAK
A	SELECTION BIAS	1	2	(3)
B	STUDY DESIGN	(1)	2	3
C	CONFOUNDERS	(1)	2	3
D	BLINDING	(1)	2	3
E	DATA COLLECTION METHOD	1	(2)	3
F	WITHDRAWALS AND DROPOUTS	1	2	(3) Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
(3	WEAK)	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No   Yes

If yes, indicate the reason for the discrepancy

1   Oversight
2   Differences in interpretation of criteria
3   Differences in interpretation of study

Final decision of both reviewers (circle one):

1   STRONG
2   MODERATE
3   WEAK

4

Paper ③ ~~Moderate~~ *weak*

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP
Effective Public Health Practice Project

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) **Are the individuals selected to participate in the study likely to be representative of the target population?**

1 Very likely
②　Somewhat likely
3 Not likely
4 Can't tell

(Q2) **What percentage of selected individuals agreed to participate?**

1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
⑤ Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	③

B) STUDY DESIGN

Indicate the study design

1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
④ Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify _____
8 Can't tell

Was the study described as randomized? If NO, go to Component C.

(No) 　　　Yes

If Yes, was the method of randomization described? (See dictionary)

No 　　　Yes

If Yes, was the method appropriate? (See dictionary)

No 　　　(Yes)

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	②	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

    1 Yes
    2 No *(circled)*
    3 Can't tell

The following are examples of confounders:

    1 Race
    2 Sex
    3 Marital status/family
    4 Age
    5 SES (income or class)
    6 Education
    7 Health status
    8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

    1 80 – 100% (most)
    2 60 – 79% (some)
    3 Less than 60% (few or none)
    4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1 *(circled)*	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

    1 Yes *(circled)*
    2 No
    3 Can't tell

(Q2) Were the study participants aware of the research question?

    1 Yes
    2 No *(circled)*
    3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2 *(circled)*	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

    1 Yes
    2 No *(circled)*
    3 Can't tell

(Q2) Were data collection tools shown to be reliable?

    1 Yes
    2 No
    3 Can't tell *(circled)*

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2 *(crossed out)*	3 *(circled)*

F) **WITHDRAWALS AND DROP-OUTS**

(Q1)   Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

    1   Yes
    2   No
    3   Can't tell
    4   Not Applicable (i.e. one time surveys or interviews)

(Q2)   Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

    1   80 -100%
    2   60 - 79%
    3   less than 60%
    4   Can't tell
    5   Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	Not Applicable
See dictionary	1	2	3	

G) **INTERVENTION INTEGRITY**

(Q1)   What percentage of participants received the allocated intervention or exposure of interest?

    1   80 -100%
    2   60 - 79%
    3   less than 60%
    4   Can't tell

(Q2)   Was the consistency of the intervention measured?

    1   Yes
    2   No
    3   Can't tell

(Q3)   Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

    4   Yes
    5   No
    6   Can't tell

H) **ANALYSES**

(Q1)   **Indicate the unit of allocation (circle one)**
    community   organization/institution   practice/office   individual

(Q2)   **Indicate the unit of analysis (circle one)**
    community   organization/institution   practice/office   individual

(Q3)   Are the statistical methods appropriate for the study design?

    1   Yes
    2   No
    3   Can't tell

(Q4)   Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

    1   Yes
    2   No
    3   Can't tell

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	2	(3)	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		1	(2)	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		(1)	2	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		1	(2)	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	(2)	(3)	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	3	(Not Applicable)

GLOBAL RATING FOR THIS PAPER (circle one):

1   STRONG   (no WEAK ratings)
2   MODERATE   (one WEAK rating)
(3) WEAK   (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No   Yes

If yes, indicate the reason for the discrepancy

1   Oversight
2   Differences in interpretation of criteria
3   Differences in interpretation of study

Final decision of both reviewers (circle one):

1   STRONG
2   MODERATE
3   WEAK

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

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COMPONENT RATINGS

A)   SELECTION BIAS

(Q1)   Are the individuals selected to participate in the study likely to be representative of the target population?
1   Very likely
2   Somewhat likely
3   Not likely
4   Can't tell

(Q2)   What percentage of selected individuals agreed to participate?
1   80 - 100% agreement
2   60 – 79% agreement
3   less than 60% agreement
4   Not applicable
5   Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	③

B)   STUDY DESIGN

Indicate the study design
1   Randomized controlled trial
2   Controlled clinical trial
3   Cohort analytic (two group pre + post)
4   Case-control
5   Cohort (one group pre + post (before and after))
6   Interrupted time series
7   Other specify _____
8   Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	②	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?
1. (Yes)
2. No
3. Can't tell

The following are examples of confounders:
1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?
1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?
1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to be reliable?
1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) **Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**
1 Yes
2 No
3 Can't tell
4 Not Applicable (i.e. one time surveys or interviews)

(Q2) **Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) **What percentage of participants received the allocated intervention or exposure of interest?**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell

(Q2) **Was the consistency of the intervention measured?**
1 Yes
2 No
3 Can't tell

(Q3) **Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?**
4 Yes
5 No
6 Can't tell

H) ANALYSES

(Q1) **Indicate the unit of allocation (circle one)**
community   organization/institution   practice/office   individual

(Q2) **Indicate the unit of analysis (circle one)**
community   organization/institution   practice/office   individual

(Q3) **Are the statistical methods appropriate for the study design?**
1 Yes
2 No
3 Can't tell

(Q4) **Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**
1 Yes
2 No
3 Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	2	(3)	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		1	(2)	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		(1)	2	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		1	(2)	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	(2)	(3)	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	3	(Not Applicable)

GLOBAL RATING FOR THIS PAPER (circle one):

1   STRONG   (no WEAK ratings)
(2)   MODERATE   (one WEAK rating)
3   WEAK   (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

     No   Yes

If yes, indicate the reason for the discrepancy

     1   Oversight
     2   Differences in interpretation of criteria
     3   Differences in interpretation of study

Final decision of both reviewers (circle one):   1   STRONG
     2   MODERATE
     3   WEAK

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

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COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?
1 Very likely
2 Somewhat likely
3 Not likely
4 Can't tell

(Q2) What percentage of selected individuals agreed to participate?
1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
5 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design
1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify _____
8 Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?
1 Yes *(circled)*
2 No
3 Can't tell

The following are examples of confounders:
1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
1 80 – 100% (most) *(circled)*
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1 *(circled)*	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
1 Yes *(circled)*
2 No
3 Can't tell

(Q2) Were the study participants aware of the research question?
1 Yes
2 No *(circled)*
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3 *(circled)*

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?
1 Yes
2 No
3 Can't tell *(circled)*

(Q2) Were data collection tools shown to be reliable?
1 Yes
2 No
3 Can't tell *(circled)*

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3 *(circled)*

2

F) WITHDRAWALS AND DROP-OUTS

(Q1) **Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**
1 Yes
2 No
3 Can't tell
4 Not Applicable (i.e. one time surveys or interviews)

(Q2) **Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) **What percentage of participants received the allocated intervention or exposure of interest?**
1 80 -100%
2 60 - 79%
3 less than 60%
4 Can't tell

(Q2) **Was the consistency of the intervention measured?**
1 Yes
2 No
3 Can't tell

(Q3) **Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?**
4 Yes
5 No
6 Can't tell

H) ANALYSES

(Q1) **Indicate the unit of allocation (circle one)**
community   organization/institution   practice/office   individual

(Q2) **Indicate the unit of analysis (circle one)**
community   organization/institution   practice/office   individual

(Q3) **Are the statistical methods appropriate for the study design?**
1 Yes
2 No
3 Can't tell

(Q4) **Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**
1 Yes
2 No
3 Can't tell

3

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	(2)	3	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		1	(2)	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		(1)	2	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		1	2	(3)	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	2	(3)	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	3	(Not Applicable)

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
3	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No   Yes

If yes, indicate the reason for the discrepancy

1   Oversight
2   Differences in interpretation of criteria
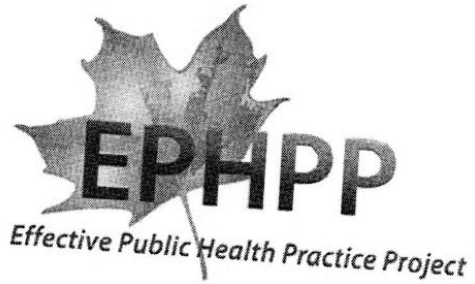3   Differences in interpretation of study

Final decision of both reviewers (circle one):   1   STRONG
     2   MODERATE
     3   WEAK

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP

Effective Public Health Practice Project

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1 Very likely
2 Somewhat likely
3 Not likely
4 Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1 80 - 100% agreement
2 60 – 79% agreement
3 less than 60% agreement
4 Not applicable
5 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	(2)	3

B) STUDY DESIGN

Indicate the study design

1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort (one group pre + post (before and after))
6 Interrupted time series
7 Other specify _____
8 Can't tell

Was the study described as randomized? If NO, go to Component C.

No   Yes

If Yes, was the method of randomization described? (See dictionary)

No   Yes

If Yes, was the method appropriate? (See dictionary)

No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	(1)	2	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?
1 Yes
2 No
3 Can't tell

The following are examples of confounders:
1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
1 Yes
2 No
3 Can't tell

(Q2) Were the study participants aware of the research question?
1 Yes
2 No
3 Can't tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?
1 Yes
2 No
3 Can't tell

(Q2) Were data collection tools shown to be reliable?
1 Yes
2 No
3 Can't tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?
  1 Yes
  2 No
  3 Can't tell
  4 Not Applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).
  1 80 -100%
  2 60 - 79%
  3 less than 60%
  4 Can't tell
  5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?
  1 80 -100%
  2 60 - 79%
  3 less than 60%
  4 Can't tell

(Q2) Was the consistency of the intervention measured?
  1 Yes
  2 No
  3 Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
  4 Yes
  5 No
  6 Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)
  community   organization/institution   practice/office   individual

(Q2) Indicate the unit of analysis (circle one)
  community   organization/institution   practice/office   individual

(Q3) Are the statistical methods appropriate for the study design?
  1 Yes
  2 No
  3 Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?
  1 Yes
  2 No
  3 Can't tell

3

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	(2)	3	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		(1)	2	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		(1)	2	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		(1)	2	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		(1)	2	3	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		(1)	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

(1) STRONG (no WEAK ratings)
2 MODERATE (one WEAK rating)
3 WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

1 Oversight
2 Differences in interpretation of criteria
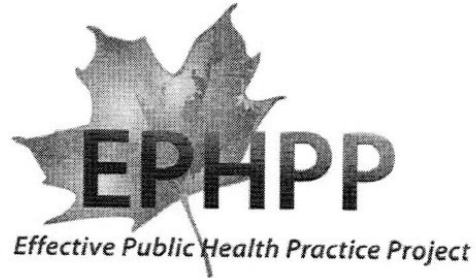3 Differences in interpretation of study

Final decision of both reviewers (circle one): 1 STRONG
2 MODERATE
3 WEAK

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP

Effective Public Health Practice Project

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely *(circled)*
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 - 100% agreement
2. 60 – 79% agreement
3. less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	③

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before and after))
6. Interrupted time series
7. Other specify _____
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

  No   Yes

If Yes, was the method of randomization described? (See dictionary)

  No   Yes

If Yes, was the method appropriate? (See dictionary)

  No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	②	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?
1. Yes
2. No
3. Can't tell

The following are examples of confounders:
1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't Tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?
1. Yes
2. No
3. Can't tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?
1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to be reliable?
1. Yes
2. No
3. Can't tell

RATE THIS SECTION See dictionary	STRONG 1	MODERATE 2	WEAK 3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?
- 1 Yes
- 2 No
- 3 Can't tell
- 4 Not Applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).
- 1 80 -100%
- 2 60 - 79%
- 3 less than 60%
- 4 Can't tell
- 5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?
- 1 80 -100%
- 2 60 - 79%
- 3 less than 60%
- 4 Can't tell

(Q2) Was the consistency of the intervention measured?
- 1 Yes
- 2 No
- 3 Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
- 4 Yes
- 5 No
- 6 Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)
community   organization/institution   practice/office   individual

(Q2) Indicate the unit of analysis (circle one)
community   organization/institution   practice/office   individual

(Q3) Are the statistical methods appropriate for the study design?
- 1 Yes
- 2 No
- 3 Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?
- 1 Yes
- 2 No
- 3 Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	2	(3)	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		1	(2)	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		1	(2)	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		1	(2)	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	(2)	3	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	(3)	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
(2)	MODERATE	(one WEAK rating)
3	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

    No   Yes

If yes, indicate the reason for the discrepancy

    1   Oversight
    2   Differences in interpretation of criteria
    3   Differences in interpretation of study
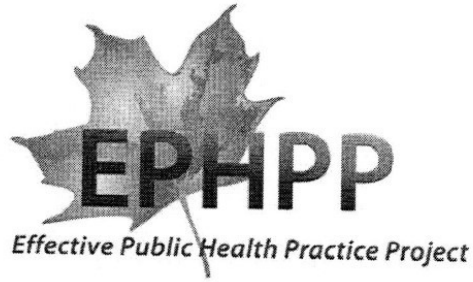
Final decision of both reviewers (circle one):   1   STRONG
                                              2   MODERATE
                                              3   WEAK

**QUALITY ASSESSMENT TOOL FOR
QUANTITATIVE STUDIES**

EPHPP

Effective Public Health Practice Project

COMPONENT RATINGS

A)   SELECTION BIAS

(Q1)   Are the individuals selected to participate in the study likely to be representative of the target population?
1   Very likely
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3   Not likely
4   Can't tell

(Q2)   What percentage of selected individuals agreed to participate?
1   80 - 100% agreement
2   60 – 79% agreement
3   less than 60% agreement
4   Not applicable
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RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	③

B)   STUDY DESIGN

Indicate the study design
1   Randomized controlled trial
2   Controlled clinical trial
3   Cohort analytic (two group pre + post)
4   Case-control
5   Cohort (one group pre + post (before and after))
6   Interrupted time series
7   Other specify _____
8   Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	②	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?
- 1 Yes
- 2 No
- 3 Can't tell

The following are examples of confounders:
- 1 Race
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- 3 Marital status/family
- 4 Age
- 5 SES (income or class)
- 6 Education
- 7 Health status
- 8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
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- 3 Less than 60% (few or none)
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RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	(2)	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
- 1 Yes
- 2 No
- 3 Can't tell

(Q2) Were the study participants aware of the research question?
- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	(2)	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?
- 1 Yes
- 2 No
- 3 Can't tell

(Q2) Were data collection tools shown to be reliable?
- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	(2)	(3)

F) **WITHDRAWALS AND DROP-OUTS**

(Q1) **Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**
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4 Not Applicable (i.e. one time surveys or interviews)

(Q2) **Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**
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2 60 - 79%
3 less than 60%
4 Can't tell
5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) **INTERVENTION INTEGRITY**

(Q1) **What percentage of participants received the allocated intervention or exposure of interest?**
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(Q2) **Was the consistency of the intervention measured?**
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H) **ANALYSES**

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(Q3) **Are the statistical methods appropriate for the study design?**
1 Yes
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3 Can't tell

(Q4) **Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**
1 Yes
2 No
3 Can't tell

3

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

		STRONG	MODERATE	WEAK
A	SELECTION BIAS	1	2	**(3)**
B	STUDY DESIGN	1	**(2)**	3
C	CONFOUNDERS	1	**(2)**	3
D	BLINDING	1	**(2)**	3
E	DATA COLLECTION METHOD	1	**(2)**	3
F	WITHDRAWALS AND DROPOUTS	STRONG 1	MODERATE 2	WEAK 3 **(Not Applicable)**

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
3	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No   Yes

If yes, indicate the reason for the discrepancy

1	Oversight
2	Differences in interpretation of criteria
3	Differences in interpretation of study

Final decision of both reviewers (circle one):

1	STRONG
2	MODERATE
3	WEAK

4

Paper ⑨   Moderate

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

EPHPP

Effective Public Health Practice Project

COMPONENT RATINGS

A)   SELECTION BIAS

(Q1)   Are the individuals selected to participate in the study likely to be representative of the target population?
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(Q2)   What percentage of selected individuals agreed to participate?
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4   Not applicable
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RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	(1)	(2)	3

B)   STUDY DESIGN

Indicate the study design
1   Randomized controlled trial
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3   Cohort analytic (two group pre + post)
4   Case-control
5   Cohort (one group pre + post (before and after))
6   Interrupted time series
7   Other specify _____
8   Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	(1)	2	3

1

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

1 ~~Yes~~
2 No
3 Can't tell

The following are examples of confounders:

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

Driving license

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1 80 – 100% (most)
2 60 – 79% (some)
3 Less than 60% (few or none)
4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

1 Yes
2 No
3 Can't tell

(Q2) Were the study participants aware of the research question?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1 Yes
2 No
3 Can't tell

(Q2) Were data collection tools shown to be reliable?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

2

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

		STRONG	MODERATE	WEAK	
A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	(2)	3	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		(1)	2	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		1	(2)	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		(1)	2	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	2	(3)	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	3	(Not Applicable)

GLOBAL RATING FOR THIS PAPER (circle one):

(1) STRONG   (no WEAK ratings)
(2) MODERATE   (one WEAK rating)
3   WEAK   (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

    No   Yes

If yes, indicate the reason for the discrepancy

    1   Oversight
    2   Differences in interpretation of criteria
    3   Differences in interpretation of study

Final decision of both reviewers (circle one):   1   **STRONG**
    2   **MODERATE**
    3   **WEAK**

4

SECTION C4

CONSULTANCY

Design, develop, implement and evaluate an educational session to pregnant women who have no intention to stop smoking

Contents

Section   **Page**

4.1a   Assessment of requests for Consultancy

This consultancy was offered through Luton Borough Council, Public Health service through their 1 year contract on the Smoking in Pregnancy Incentive Scheme. Tackling smoking in pregnancy is a public health priority as smoking in pregnancy is the single most modifiable risk for adverse outcomes in pregnancy. These adverse outcomes affect the mother, their unborn baby and families and leads to an increased risk of infant mortality, (NCSCT, 2012). Smoking in pregnancy can lead to serious life threatening complications during childbirth; increased risk of miscarriage, premature birth, low birth weight and stillbirth. In addition to these human costs, the cost to the NHS of treating both mothers and babies (up to the first 12 months of life) to address the problems associated with maternal smoking is estimated to be between £20 million and £87.5 million every year, (Godfrey, 2010).

As Luton has such a high number of women smoking (14%) at time of delivery compared to the national average (10%), Live Well Luton Stop Smoking service were asked to set up the new smoking in pregnancy incentive scheme and design, develop, deliver and evaluate it. I spoke to the manager of the stop smoking service to discuss this scheme further and apply for the available consultancy role. The project was to design and develop an educational session to the pregnant women who have no intention to quit smoking, they were paid £50 to attend the session, with the aim that they will then want to access the stop smoking service to try to stop smoking. This formed the initial part of the incentive scheme, which was commissioned by Luton Borough Council, Public Health service and the rest of the general incentive scheme was delivered by Live Well Luton Stop Smoking Service. The consultancy role involved designing the educational session for the pregnant women who have no intent on stopping smoking in Luton and delivering, jointly with the Public Health Specialist Midwife. The Experiential Learning Theory, (Kolb, 1984), understands that learning is influenced on experience and is not fixed or the same for everyone. Honey and Mumford (1986) developed this to think that people learn through experiences. It is thought that these educational sessions would involve watching and listening to our session in which they will experience a change in thoughts and feelings to go on to consider a change in behaviour. These women were identified by the Luton Public Health Specialist Midwife (PHSM) and referred through to me to deliver the education session jointly with the PHSM to the pregnant women. Following the education session, the pregnant women received a £50 voucher from Luton

Borough Council and then identify whether they would like to try to stop smoking. I would then refer them to the Luton Stop Smoking Service if they would like to stop smoking and if they decided not to try to stop smoking, they were referred to the Luton Public Health Specialist Midwife. The main objective of the educational session was to increase the knowledge of pregnant women who currently have no desire to stop smoking, in the risks associated with smoking during pregnancy and increase the numbers to at least considering stopping smoking or trying to stop. This is to try to reduce the number of smoking in pregnancy related birth difficulties in Luton.

Following email and face-face conversations a proposal was received via email from the requesting body: Luton Borough Council through to the service and directed to me. The proposal concisely outlined ideas involved in the Smoking in Pregnancy Incentive Scheme that will be delivered by the Stop Smoking Service and an idea outline for the proposed education session. (All evidence can be found in consultancy log folder).

After receiving the proposal through Live Well Luton stop smoking manager a preliminary meeting was arranged with the Live Well Luton Public Health commissioners and stop smoking service manager. This gave me the opportunity to discuss what is expected for the educational session, the women that it should be tailored towards, and the funds available to develop it. We also discussed the main aims and outcomes for me to prepare the session. This meeting allowed me to understand the full Smoking in Pregnancy Incentive Scheme that will be delivered by the stop smoking service and what will be expected of the consultancy separately, which allowed me to draft the consultancy agreement. The role of the consultancy would start from 1st April 2016, with the aims of the educational session to be designed and ready to be delivered within one month. The aim would then be to deliver this session to the pregnant women identified by the specialist midwife to a maximum of 50 women over a one year period. I would then be able to evaluate the number of women who were offered the session, the number or women who attended the session, the number of women who attempted to stop smoking and the number of women that stopped smoking.

The framework underpinning the consultancy was agreed on the process consultation model (Schein, 1999), where the main goal was to develop a helping relationship. Both the client and I worked together in planning the project to share the problem, it helped reveal what the

client wants and what would be helpful for them to be included in the educational session and freebie packs, (Schein, 1999). There were also different clients involved in this consultancy, with Luton Borough Council Public Health team being the contact clients, the Public Health Specialist Midwife was the intermediate client and the ultimate clients were the pregnant women booked in for an educational session, (Schein, 1999). I did feel that once the initial plan and process were written and agreed, I did change to the Doctor-Patient model, (Schein, 1999), once I was delivering the educational sessions to the pregnant women. This was due to the fact we were discussing the problems that the woman is currently facing, or potentially will be in the future and helping them to find a solution to prevent this or manage the current problem, (Schein, 1999).

Based on the preliminary meeting findings, a consultancy agreement was drafted and emailed to the consultancy requesting body to be reviewed. The agreement was returned by Luton Borough Council and had been signed to agree that the contents were correct, (See Appendix 1, page 12). The purpose of the consultancy agreement was to clearly outline and define the consultancy role, to allow both myself and Luton Borough Council clear on what is expected. This also includes a clear outline of time scales and the expected outcome. The full lists of consultancy outcomes are outlined in the consultancy agreement contract, including ethical considerations, which can be found in appendix 1.

4.2b   Consultancy Plan

Once the consultancy agreement had been agreed and signed (Appendix 1, page 285), a consultancy plan was drafted, (Appendix 2, page 289). The plan outlines each step of the consultancy in more detail, with an idea for the educational session development and the agreed steps prior and post the delivery of the session. The consultancy plan also includes a timescale for the consultancy, in a table format, to show each step of the consultancy and when to expect each part to be completed. The consultancy plan was then submitted to the Luton Borough Council Public Health Service to be reviewed and agreed before starting the development of the session.

Once the consultancy plan had been agreed and signed, I was able to start developing the educational session for the pregnant smokers with no desire to stop smoking. These women

are identified during the first visit from their community midwife, in which they are given a Carbon Monoxide test and identified as a smoker or non-smoker. They are then offered a referral to the stop smoking service; if they agree, the referral to the stop smoking service is done directly from the midwife. If they decline, they are then referred to the Public Health Specialist Midwife who contacts them to offer the educational session. The idea of the education session was to include all the facts about the effects of smoking during pregnancy with pictures of the outcomes to make it hard-hitting. It is important to include the benefits of stopping smoking with pictures of healthy babies as well, to ensure they feel there is a positive side if they stop smoking. Included in the educational session were key messages to the women, such as:

1. Number of chemicals in a cigarette
2. Carbon monoxide and other toxins and the effects
3. Risks of smoking on baby for birth
4. Risks of smoking on development of baby
5. Risks of smoking on baby later in life
6. If smoke during pregnancy and childhood, child more likely to start smoking
7. Risks of passive smoking
8. Benefits of stopping smoking
9. What is available to support them to stop smoking – stop smoking service and Nicotine Replacement Products

It has been found that deeper learning is more effective and found to have more learning satisfaction from students, (Ramsden et al, 1989) and the importance of including a variety of methods to help students learn to allow for many different learning styles. This is to try to help all learners to change their understanding on the topic, (Marton and Ramsden, 1988). Therefore, the educational session was written out and designed in a flip chart format using a Power Point Presentation with graphic pictures on each page to help the women to understand the harmful effects of smoking during pregnancy. This included graphic pictures, text and was also interactive to try and allow for the different learning styles. The idea was laid out and designed by myself, discussed and agreed with the Public Health specialist midwife and Luton Borough Council Public Health and then printed using the funds available by Luton Borough Council Public Health Service, (See Appendix 3, page 293).

Following this, an account was set up with Luton Mall vouchers to be able to invoice, pay and credit Luton Mall vouchers to give to the women at the education session appointments. This is then managed by the consultant (myself) who has access to this account, alongside Live Well Luton, to be able to fund the vouchers for £50 at the educational session or £10 for the general incentive scheme run by Live Well Luton. Each voucher was assigned and logged to each client that attended the educational session and they were asked to sign a sheet to say they have received it.

A pathway was then created between the consultant and the specialist midwife in a way to meet weekly to discuss the smoking in pregnancy referrals of the women who want to stop and do not want to stop. It is the responsibility of the midwife to contact the women who do not want to stop smoking for ethical and confidentiality reasons. She will book them in a joint appointment between herself and the consultant at an agreed time during our weekly meetings for the educational session. Working alongside the specialist midwife allowed me the opportunity to increase my confidence in running a consultancy project as it is something very new to me. I also feel that it has helped me to develop professional skills and experience in working and managing a consultancy project, as well as working with a wider range of health professionals.

The layout of the sessions involved both the specialist midwife and the consultant to make our introductions and discuss the session. We both went through the designed educational session flip chart, giving them all the information and facts about the risks of smoking during pregnancy and the positive effects of stopping. I talked more about smoking, the chemicals in them and how they can affect the client and the midwife talked more about the outcomes to the baby. They also received their free pregnancy freebie packs, which contains: an appointment card, a key messages card, wall-planner, hairbrush, trolley coin, pen and leaflets from other services as designed and printed by the consultant with a private designer and paid for by Luton Public Health, (See Appendix 4, page 304). There were plenty of opportunities for questions and we tried to make the sessions informal and more of a discussion so we could build rapport with the women. Towards the end of the session we would discuss the stop smoking service and how they would now feel about a referral to them. If they were keen to stop smoking, I would discuss the programme with them and book them an

appointment directly. If they still felt that they did not want to stop smoking, they were then booked in for a high-risk pregnancy plan with the midwife.

4.3   Establish, develop and maintain working relationships with clients

The consultancy was initially conducted at the Luton and Dunstable Hospital with the Public Health Specialist Midwife (PHSM), where we agreed would be the best location for us to meet weekly to discuss referrals and clients and have clinics with the pregnant smokers on other days. We could meet in her office on a weekly basis and she was able to get us a clinic room to use in the maternity outpatient department to see the pregnant clients. The rest of the work was completed at home. The working relationship with the PHSM was difficult initially due to complications organising time together and working through the referrals in the most effective way. We both had different ideas on the best way to do this as we both have different ways of preferred working. However, this was sorted and organised quickly and our working relationship became very effective once we could work out the best way to work for both of us. We also attended regular meetings with Public Health with an update on the project, where it is at and the outcomes with the clients. This allowed them to feel they understood the progress we were making and how effective it was at each stage of the project. I think this made them feel more confident in what we were doing as it was funded by them and gave us the opportunity to discuss any problems we were having and how we overcame them.

The initial conversation on the telephone with the pregnant women was delivered by the PHSM and so a script was decided between us to ensure the correct information was given to the women on the phone, allowing them to realise the importance of attending the educational session. We found it important to build rapport with the pregnant women to ensure that they felt they were in a confidential and non-judgmental place and this led to a more meaningful conversation throughout the session. In previous sessions before the consultancy was started, these women were difficult to engage and often did not attend appointments so we had to make the sessions more relaxed and fun, whilst still being informative. We felt that this would be the best way to ensure that the women felt relaxed and were more likely to be open to the information given and think about stopping smoking.

The initial part of the consultancy, the design, printing and setting up the pathways with the midwife took longer than expected. We were meant to have all the packs and vouchers ready and to start delivering the sessions by May 2016, however it took longer due to problems with the funding from Luton Borough Council and so we did not start until 1st August 2016. This was discussed with Luton Borough Council, Public Health and they were aware this was due to lack of funding initially. I found this a challenging part of the consultancy project as I was keen to start moving forward with it but was unable to do so. I was also quite concerned how this may look to Luton Borough Council that it was starting late and we were finding it difficult to set up communication and pathways between myself and the PHSM. During this period, it gave me the opportunity to contact the PHSM and try to set up these pathways between us to allow in a more collaborative way of working, which continued to improve throughout the project.

4.4 Conduct the Consultancy

During the period of 1st April 2016 to 31st March 2017, I implemented the following activities in line with the requirements of the consultancy:

1) Manage and discuss the referrals to Live Well Luton Stop smoking service from the midwives and reports back to the Public Health Specialist Midwife on their attendance rate and smoking outcomes

2) Meet with the Public Health Specialist Midwife on a weekly basis to go through the referral outcomes, refer to midwives for DNAs and quit outcomes and to discuss and book in the no desire to quit referrals.

3) Jointly attend educational sessions with the Public Health Specialist Midwife to the pregnant women who don't want to stop smoking to deliver the messages about the risks of smoking in pregnancy and benefits of stopping

4) Manage the Luton Mall vouchers to ensure that we always have a £50 voucher for each pregnant woman booked in to the educational sessions and £10 vouchers for the women who want to stop smoking within the stop smoking service

5) Manage the Freebie Packs given to each pregnant woman accessing the consultancy or the Stop Smoking service to ensure there is always enough made up for the clients booked in

6) Create and manage a database with all the client ID's (a unique identifiable number given to each pregnant client referred to us to maximise confidentiality) to keep account of their attendance and the outcomes

4.5 Monitor the Process of Consultancy

The consultancy project was monitored throughout the 6 months on a weekly basis during the meetings with the Public Health Specialist Midwife, this was then summarised in a final summary 6 month report starting from 1st August 2016 – 31st January 2017 (see appendix 5, page 306). After the first quarter, it was noted that most of the women were not attending the appointments discussed with the midwife for their educational session and we were wasting time in clinic waiting for them to arrive. Even though the PHSM discussed the declined referral on the phone and the importance of attending the educational session to ensure she is on the right pathway for her pregnancy, they were not attending. We decided to change the tact of the booking system and the PHSM agreed to book the clients in to a joint appointment and post them a hospital headed paper asking them to attend an appointment in maternity department to see if this improved attendance rates. Unfortunately, this did not increase attendance rates and 90% were still not attended. It was agreed from the second quarter of the project (1st November 2016), we would book these women an appointment to see them at home. Fortunately, this changed the attendance rates from 10% to 90% and we could see more of the women who had no desire to stop smoking.

4.6 Evaluate the Impact of the Consultancy

A formal evaluation of the project was written in our final project report, including the data outcomes for the full 6 months of the project. Unfortunately, due to the PHSM handing her notice in and leaving the project before the final report was written, this did not include the data regarding the No Desire To Quits (NDTQ's). The 6-month report contained both qualitative and quantitative data about the 6-month project from the consultant only, without the PHSM and sent to the Luton Borough Council Public Health Team, (see Appendix 5, page 306). See below for an overview of the results from this consultancy project:

Attendance rates for No Desire To Quits (NDTQs) went from 10% to 90% by offering home visits. We booked a total number of 19 for an educational session, of which we saw 10. Out

of those 10 NDTQ's, 4 went on to stop smoking and although 6 did not stop smoking due to the complex cases of these women, we did manage harm reduction with most of them cutting down.

By looking at the data from the consultancy, it shows that by educating these women who have no desire to stop smoking on the effects of smoking during their pregnancy, they will want to change their behaviour. The women who smoke during pregnancy have been found to be from lower socio-economic backgrounds, (Himmerova et al, 2006) and providing interventions designed specifically for these women in the most informative or influential way have been found to be successful, (Haug, 1995). It was found that most of these women had not received any information previously about the harms of smoking during pregnancy and felt that it was fine to continue. This shows the importance of educating the public and professionals on the harms of smoking during pregnancy to allow people to make an informed decision whether they want to continue or not. Following this, although the number of women reached and attended as part of the project was small, these are women that are usually left to continue smoking during their pregnancy with negative birth outcomes for their babies. During these sessions, it was often felt that they were not attending just for the £50 voucher they were receiving either, they often did seem to attend due to worry for the health of their baby and wanted to stop smoking for this reason, not for the financial incentive. This was analysed by the Public Health Specialist Midwife who was not offering these vouchers in the initial telephone call and only giving them out at the end of the educational session after the behaviour change discussion was completed and agreed.

Throughout this project, there has been a lot of interest from other stop smoking services in this consultancy as it is something new that no other service is currently delivering. As part of the project, it has involved going to various meetings and conferences on Smoking in Pregnancy to deliver the current progress and outcomes of the project for services to commission in the future. On reflection, I feel that this has been a great opportunity for development. I have had the opportunity to work with completely different health professionals, in which many challenges occurred but were also resolved. I have also had the experience of delivering presentations to the Smoking in Pregnancy leads from Luton, Bedfordshire and East of England who were interested in the outcomes and future of this

project. I am pleased that the outcomes of the project show the positive effect education and promotion can have on the complex women who would normally be left to continue smoking throughout their pregnancies due to lack of knowledge and understanding. Unfortunately, when these women decline from a referral to the stop smoking service or are only given brief advice about the risks associated with smoking, they continue to smoke and increase the risks of poor health outcomes to their babies, (Haug, 1995) and this shows the importance of an intervention like this.

After asking the Public Health Specialist Midwife for feedback on working with me on this consultancy project, she reports that she has enjoyed working with me. Her feedback stated that I was always professional with the clients and come across very understanding and empathic to them which has been important in the positive outcomes we have received. She also states that I have been a key part on this project and have helped keep her organised along the way. Feedback from other members of staff has also been an increase in confidence with delivery of the consultancy, report writing and delivering presentations. It has been completely new to me and I did not know what to expect but I feel that despite the challenges I have experienced, overall, I am pleased with the project and the outcomes we have got. Following this, after our final review meeting with the initial contact client, Luton Borough Council Public Health team, they were really pleased with the outcomes of this project and were keen for something like be repeated next year.

By having the opportunity to design, develop, implement and evaluate a Health Psychology Consultancy project, I am feeling more confident about doing this in the future. My initial concerns were building relationships with clients and designing an effective intervention for the pregnant women but as the project continued, I found that if I had any concerns, the client was always approachable. One important thing for me to remember that came out of this project is that if the results were not positive, it does not necessarily reflect the work that I have done, it is something new and adaptable and the main aims are to find out the key factors in what are effective in this topic area. There were times throughout this consultancy that I felt frustrated by other professionals involved but I feel that I remained professional throughout and this helped the project to continue smoothly. I feel that if the opportunity came up to complete a consultancy project again, I would be more confident in my own

abilities in taking on a new role alongside working with different professionals as I think that this is something I was worried about initially. Overall, I have really enjoyed having the experience to work as a Health Psychologist in practise, increasing my consultancy and professional skills and it is something I would like to do in the future.

References

Godfrey, C. (2010) Estimating the costs to the NHS of smoking in pregnancy for pregnant women and infants. Department of Health Sciences: The University of York. Available at: http://www.nice.org.uk/newsroom/pressreleases/UnbornBabiesSmallChildrenTobaccoHarm.jsp#4_8 (accessed 1st July, 2016).

Haug, K., (1995). Smoking among Pregnant Women: epidemiology and health consequences. *Norsk Epidemiologi.* 5(2), 155-160.

Himmerova, V., Kralikova, E., & Mechurova, A., (2006). Smoking in Pregnant Women. *The 13th World Conference on Tobacco OR Health.*

Honey, P. & Mumford, A. (1986) *The Manual of Learning Styles*. Maidenhead, Peter Honey.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall

Marton, F. and Ramsden, P. 1988. "What does it take to improve learning?" In P.Ramsden (Ed.) *Improving Learning: New Perspectives,* 268-286. London: Logan.

National Centre for Smoking Cessation and Training (2012) Smoking in pregnancy: Project report. NCSCT: London. Available at: http://www.ncsct.co.uk/usr/pub/NCSCT%20smoking%20in%20Pregnancy%20Final%20Report.pdf (accessed 15th June, 2016).

Ramsden, P., Beswick, D and Bowden, J., (1989). Effects of Learning Skills Intervention on First Year Students' Learning. *Human Learning.* 5, 151-64.

Schein, E. H. (1999). Process Consultation Revisited: Building the Helping Relationship. United States of America: Addison-Wesley Publishing Company, Inc.

APPENDIX 1

Consultancy Agreement

Consultancy Agreement

London Metropolitan University
School of Psychology
Faculty of Life Sciences
Course Leader: Dr Joanne Lusher
Email j.lusher@londonmet.ac.uk
Tel: 0207 320 2397

Requesting body: Luton Public Health

Address: Luton Borough Council Public Health, Town Hall Extension, Luton, LU1 2BQ

Consultancy request from: Lisa Hudson

Email address: lisa.hudson@luton.pcsx.gov.uk

Job title: Development Officer, Public Health Commissioning and Procurement

Name of proposed consultant: Nicola Whippy

Work phone: 01582757635/Work mob: 07860750707

Workplace address: Live Well Luton, 28 Dunstable Road, Luton, Bedfordshire, LU1 1DY

Home address: 26 Church Street, Old Town, Hemel Hempstead, Hertfordshire, HP2 5AD

Job title: Specialist Stop Smoking Advisor

Email address: nicolaswinden@hotmail.com/ Work: Nicola.swinden@livewell-luton.org.uk

Project title: Smoking in pregnancy incentive scheme educational session.

Consultancy Outcome: To engage pregnant women in Luton who currently do not want to stop smoking, deliver an educational session about the risks of smoking during pregnancy in the hope that they will want to try to stop smoking.

Period of contract: 1st April 2016 – 31st March 2017

Submission date: 31st March 2017

1. Project description

a) Consultancy outcomes:
- To deliver an educational session to the pregnant women who currently have no desire to quit smoking
- To discuss the risks of smoking during pregnancy and the benefits of stopping smoking with these women with the hope they will at least contemplate stopping smoking
- To reduce the number of pregnant women in Luton who are smoking
- To reduce the number of negative outcomes at delivery and birth due to smoking related problems

b) Consultancy role requirement:
- To design a hard-hitting educational session targeted at pregnant women who currently have no desire to stop smoking, to include both the risks of smoking during pregnancy and the benefits of stopping smoking
- To deliver the educational session to pregnant women who currently have no desire to stop smoking at their home with a specialist midwife for safety
- To evaluate the effectiveness of the educational session in engaging the pregnant women into the service and helping them to understand the risks of smoking and whether more pregnant women are trying to stop smoking
- The evaluation report will evaluate the educational sessions content, materials and overall outcomes

2. Process/Discussions with proposed Consultant
- The consultant has been recruited via Luton Borough Council Public Health service to work alongside the smoking in pregnancy incentive scheme within Live Well Luton Stop Smoking Service
- The consultant responded to a consultancy request email by the commissioner of Live Well Luton
- The consultancy will form one of the competencies to complete the Professional Doctorate in Health Psychology

3. Funds and fee rates
- Funding will not be applicable as this will be covered as part of the consultancy module from the Professional Doctorate in Health Psychology

4. Statement of work/Consultant's proposal
- The consultant agrees to carry out the agreed project within the time frame outlined by the consultancy requestor: An educational session will be designed and ready to be delivered by 1st May 2016

- The final report evaluating the education session with be completed and submitted by 31st March 2017
- Should there be any change in the time frame, sufficient notice should be given
- The consultant will produce regular outcomes on the project so the consultancy requestor will always be aware of how the project is going. This may be weekly in the first instance and may be reduced and can be via email or face-to-face

5. <u>Ethical consideration</u>

- The consultant will hold a current CRB check
- The consultant will adhere to the local policies and procedures of Luton Borough Council, including the Data Protection Act and Information Governance
- Ethical approval will have been gained by the Consultancy requester through Luton Borough Council

Signature: Nicola Whippy

Proposed Consultant: Nicola Whippy

Date: 1/4/16

Consultancy Requestor: Lisa Hudson

Lisa Hudson

Date: 1/4/16

APPENDIX 2

Consultancy Plan

Smoking in Pregnancy Incentive Scheme – Educational Session

Nicola Whippy

Brief outline of project: A scheme has been set up to reward pregnant women for stopping smoking. For the women who have no desire to quit, they currently do not receive anything. The main aim of this project is to design and develop a one off 30-minute one-to-one, hard-hitting educational session and deliver it to the pregnant women who are currently smoking and have no desire to stop smoking. They will benefit from a £50 voucher for attending the session and can go on to receive more vouchers if they go on to stop smoking following this. This will hopefully increase the number of pregnant women who at least start thinking about stopping smoking and are more likely access the stop smoking service. The educational session will contain the risks of smoking during pregnancy with the likely negative health outcomes, the benefits of stopping smoking on both mum and baby and information on where to go for support to stop smoking.

The main outcome of the educational session is to be able to engage with the pregnant women who are smoking and have no desire to stop.

Factors to be evaluated

This project will be evaluated from various aspects of the educational session to fully establish the impact the session will have on pregnant women who are smoking.

An evaluation of each of the following components will be carried out:

1. The materials used, including:
- The presentation itself/flip chart
- The leaflet left with them at the end
- Additional materials used to demonstrate the effects of smoking on pregnancy – e.g. a doll to demonstrate some of the effects of smoking on the baby
2. The actual education session will be evaluated regarding:
- How effective the delivery of the session is – were the methods used right for target audience
- Structure of the education session – was it in the right order/did it flow, the content – was it to the right level, was all information relevant to the session, was it engaging?
- Overall, how effective was the education session – did it meet the objectives to engage with pregnant smokers who do not engage in stop smoking services and go on to stop smoking.

How will the education session be evaluated:

The materials used will be evaluated on their content and delivery to the target audience – pregnant smokers who have no desire to stop smoking. As this is the target audience, it is

important that the session is informative and shocking but also sensitive to the situation for it to be effective.

These women who are currently smoking with no desire to quit, do not access the stop smoking services, decline a referral and continue smoking. These women will often experience difficult births and negative health outcomes for their babies, e.g. low birth weight, premature birth and Sudden Infant Death Syndrome. The outcomes of the educational session will be compared to the number of women who are still smoking at delivery before the educational session. The number of women who attend the educational session and go on to access the stop smoking service with be reviewed and compared with the number of pregnant women who stop smoking for the duration of their pregnancy. This will measure how effective the education session is at informing the women of the risks of smoking during pregnancy and supporting them in deciding to stop smoking. All pregnant women will be given a unique client ID number so that they can be tracked throughout their treatment plan. This will include attending the education session, attending stop smoking appointments and receiving their incentives and being smoke free at the birth and afterwards. This will show whether the pregnant women who attend the educational session are more likely to go on to stop smoking and remain smoke free for the pregnancy and birth.

The evaluation of the education session will also consider the promotional materials used throughout and how effective they are as well as the content of the session. It is important to have partners and family members attend the educational session as well for both support and knowledge about the effects of passive smoking on the baby. This could help the pregnant woman feel more supported to stop smoking and agree to try. The overall outcome will be evaluated by the number of women who start with no desire to stop smoking and go on to attend a stop smoking appointment and stop smoking.

Possible counfounding variables, which may also need to be taken into account during evaluation:

The location of the education session will need to be convenient for the pregnant women, it may not always possible to see them at home, which might make it more difficult for them to attend. It is important to ensure it is somewhere they can get to easily.

Another variable might be a lack of support from family or partner who may also smoke. They might attend the education session to receive their voucher but feel unable to stop smoking due to the amount of people around them who smoke and are not willing to stop.

There will be a variation in the level of understanding from the women due to educational backgrounds and age. Some women will already have some knowledge of the risks of smoking and choose to continue regardless, whereas other women continue due to lack of knowledge. There is also the common issue of language barriers, which can make the educational session hard to understand for non-english speaking women. This can lead on

to misinterpretation of the educational session or the risks involved with smoking and can make their understanding difficult.

There are many cultural differences to consider, some cultures it is more acceptable to be a smoker and is a part of the whole family or community they are in. This can also link with peer pressure for younger pregnant women. They may want to stop smoking but do not feel it is possible with their friends smoking around them.

Projected timeline: The timescale of the project:

Design/development/evaluation	Month
Design education session	April 2016
Intervention designed, printed and ready for delivery	May 2016
Start delivering educational sessions	May/June 2016
Stop delivering educational sessions	January 2017
Evaluate outcomes	March 2017
Project outcomes write up completed	April 2017

Baseline data:

Local statistics in Luton show that between June 2014 and May 2015 there were approximately 265 pregnant women smoking at some point throughout their pregnancy out of the 3,290 maternities (8.1% smoking prevalence). These women were asked at their booking appointment (initial appointment with midwife following conception) about their intention to stop smoking. There was 71 (26.7%) who had no desire to stop smoking and 194 (73.3%) who were thinking of stopping

There are about 71 pregnant women per year in Luton who have no desire to stop smoking. It is thought that 53 of these women will accept the education session, 26 of those to engage in a quit attempt, with around 13 of those quitting smoking throughout their pregnancy. Currently these 71 pregnant women, who have no desire to quit, are left to continue smoking and have poorer health outcomes for their babies. By just attending the education session, we are increasing their knowledge of the risks associated with smoking during pregnancy and hopefully improving their outcomes by supporting them to stop smoking.

APPENDIX 3

Educational Session

Smoking in Pregnancy

Educational Session

Smoking in pregnancy

- What do you know about the risks of smoking in pregnancy?
- Why do you think it is important that we are here today?

What is in a cigarette?

- Over 4000 chemicals in a cigarette -

Cadmium Batteries
Butane Lighter Fluid
Stearic Acid Candle Wax
Hexamine Barbecue Lighter
Toluene Industrial Solvent
Nicotine Insecticide
Ammonia Toilet Cleaner
Acetic Acid Vinegar
Methane Sewer Gas
Arsenic Poison
Carbon Monoxide
Methanol Rocket Fuel

PUSH
Pregancy & Understanding
Smoke-free Health

Carbon Monoxide (CO)

- Poisonous gas formed during combustion (burning).

- When you breathe in, CO is transferred to bloodstream through the red blood cells 200 times faster than o2

PUSH
Pregancy & Understanding
Smoke-free Health

Effects of CO continued

- Undersize babies tend to have underdeveloped bodies.

- Lungs not ready to work on their own

- Breathing problems

- Vulnerable to asthma and Sudden Infant Death Syndrome (SIDS)

PUSH
Pregancy & Understanding
Smoke-free Health

Other problems

- Smoking during pregnancy can **have lifelong effects on your baby's brain**.

- The most serious complications — **including stillbirth, premature delivery and low birth weight**

PUSH
Pregancy & Understanding
Smoke-free Health

Toxins

- Cigarette smoke contains toxins that can damage the placenta.

- This increases your own risk of dangerous complications

- Smoking also affects the growth and development of your baby
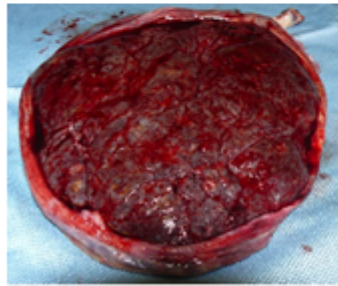
Non-Smokers Placenta

Smokers Placenta
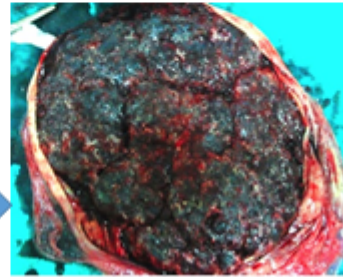
PUSH
Pregancy & Understanding
Smoke-free Health

Developmental Problems

- Smoking can damage your baby's

Airways

Healthy Airway   Asthmatic Airway
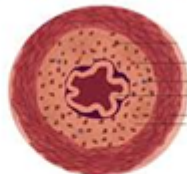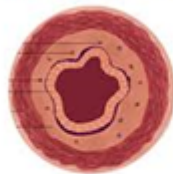
PUSH
Pregancy & Understanding
Smoke-free Health

Brain development
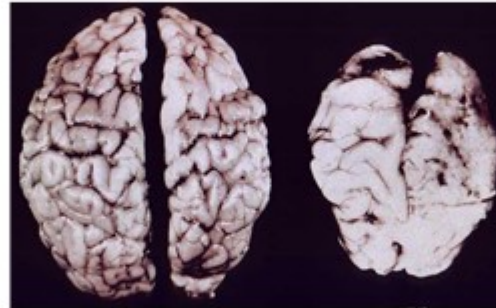
Healthy   Developmental Problems

Ears
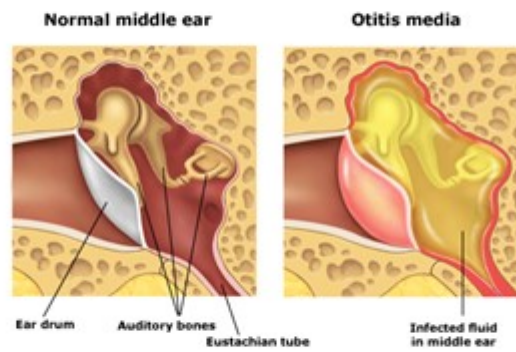
Future of your baby

PUSH
Pregancy & Understanding
Smoke-free Health

Passive Smoking

- Passive smoking can affect you and the baby both before and after birth.

- Second-hand smoke can also reduce birthweight and increase the risk of cot death.

PUSH
Pregancy & Understanding
Smoke-free Health

Benefits of stopping smoking

- STOPPING SMOKING will benefit both you and your baby immediately.

- When you stop smoking:

- YOU will have fewer complications in pregnancy

- YOU are more likely to have a healthier pregnancy and a healthier baby

- YOU will reduce the risks to the baby

PUSH
Pregnancy & Understanding
Smoke-free Health

Benefits continued

- Stopping smoking will also benefit your baby later in life.
- Money
- Sense of smell and taste improves

HEALTHY START

PUSH
Pregnancy & Understanding
Smoke-free Health

What support is available?

Nicotine Replacement Therapy (NRT)

What you know now

- What do you think the risks of smoking in pregnancy are now following this session?
- How do you feel about continuing to smoke?

Summary

• Smoking during pregnancy increases the risks of many

different complications

• Passive smoking has all the same risks!!

• You can stop smoking with FREE trained help – Live Well Luton and using NRT

• Be part of our incentive scheme

Thank you for listening! ☺

APPENDIX 4

Freebie Packs

APPENDIX 5

Final 6-Month Summary Report

Smoking in pregnancy pilot programme summary report

August 2016 to January 2017

Overview

The PUSH programme was set up in Luton as a 12-month pilot programme to focus on bringing several positive health outcomes because of supporting women to stop smoking, who would either continue to smoke or just cut down at some point in their pregnancy. The programme is designed to operate in partnership with the LWL smoking in pregnancy lead and the Public Health Specialist Midwife (PHMW) at Luton and Dunstable NHS Hospital Trust. This summary report details the key findings over the first 6 months of the project. For detailed information about progress of the programme please refer to the quarterly reports.

6-month activity

The first three months of the project involved the design and production of all materials required. A bespoke educational programme was put together for those women who initially declined a referral into the stop smoking service together with 500 packs for all women entering the programme. Operational pathways and procedures were also produced in partnership with the PHMW, with the project going live and seeing clients from 1st August 2016.

The initial client pathway was developed as a two-level approach ensuring that all pregnant smokers were captured and contacted. Women who declined a stop smoking referral at their booking appointment after having their carbon monoxide reading completed, were identified as 'no desire to quit' clients (NQTQ) and those who accepted the referral were known as 'thinking of stopping smoking' clients (TOS). The NDTQ's were not counted as referrals so contact with these women came from the PHMW where calls were made to discuss their current carbon monoxide levels and smoking in pregnancy from an antenatal perspective. These women were then invited to the bespoke education session if they did not express an interest in stopping smoking from a midwifery opinion. The referrals made to the service for women who were TOS were contacted by LWL SIP Lead as per the pathway.   Joint weekly meetings between LWL SIP Lead and PHMW were set up from the outset to ensure the smooth management, exchange and feedback of referrals between the trust and the stop smoking service and to organise and hold the joint educational clinics.

One of the initial identified challenges particularly with the NQTQ women was the difficulty in contacting them. When the PHMW engaged with these women and booked them into an educational appointment at the L&D hospital, very few clients were attending, for example, on a few occasions there were 4 clients booked in and not one attended. It was assumed that travel, parking, and additional costs to attend were a barrier to woman attending appointments so changes to the pathway involved offering home visits to these women with a personalised text to increase engagement and attendance.

November started to offer these home visits to the NDTQ pregnant women to try to increase attendance rates which has been found to have increased uptake and attendance rates, meaning more of these women are able to be seen and provided with the education to make an informed choice about their smoking during pregnancy. The month of November showed a much higher attendance rate for the NDTQ's and it was working well with regular weekly meetings between the PHMW and the SIP Lead. This month also saw the annual CO monitor training session for all the community midwives from the speaker Lisa Fendall to increase and refresh the skills and motivation for CO monitoring all pregnant women. The management of the community midwife CO monitor pathway was moved back to the Stop Smoking Service to audit and manage going forward. From

this point the audit showed no community midwives with a CO monitor or access to referring women into the service.

As the home visits were becoming established it became apparent that time spent clinically was increasing and non-clinical time for managing, exchanging and feeding back on referrals was less available. To resolve this, it was agreed to increase the amount of joint time between the PHMW and the SIP Lead to twice a week.

Towards the end of the 6 month period the PHMW was planning to leave her role at the Trust and availability for dealing with NDTQ's and referrals became reduced from January 2017 with the decision that no further NDTQ would be contacted or booked into an educational session from February 2017 but time spent jointly to review the current caseload.

Data

The tables below show outcomes for the first 6 months of the project.

Table 1: Key Performance Indicators; Appendix A of service specification

Key Performance Indicator	Number of women	Expected outcome	6-month outcome
1. Number of women that are referred accepted into the service.	158	100%	100%
2. Minimum number of eligible women engaging with the service.	80	80% (290)	50.6%
	78 did not engage (breakdown below) 7 declined referral 23 stopped on own 3 non-smokers 6 no number available 36 No answer 3 miscarriage		
3. Minimum number of women enrolled in the programme that will attempt a quit.	45	70%	56%
	Age range 12-19 = 3 20-29 = 24 30-39 = 16 40+ - = 2		
	Ethnicity Any other white = 18 Black British = 2 Pakistani = 1 White British = 18 White Irish = 1 Unknown = 5		
	Area of deprivation Yes = 13 No = 32		

	Socio-economic status R&M = 11 Never worked/unemployed over 1 year = 7 Student = 1 Intermediate occupation = 1 Managerial/professional = 1 Unknown = 24		
4. Number of women enrolled in programme that will achieve a successful quit, validated by CO screening.	29 19 CO validated 10 self-report	30%	64% from those setting quit date 36% from those engaging in service 18% from all clients accepted into the service
5. Number of women achieving a quit, who at booking were identified as having 'no desire to quit'.	5	12.5%	17%
6. Number of women who have remained quit, as validated by CO screening at 8 weeks postnatal	0	50%	0% None of the NDTQs who have quit have given birth yet
7. Number of women routinely screened for CO at the booking appointment with the midwife	unknown	95%	Maternity services data
8. Number of women routinely screened for CO at the 36/40-week appointment with the midwife	unknown	95%	Maternity services data
9. Number of women achieving a successful quit initiating breastfeeding	unknown	75%	Maternity services data
10. Reduction in number of women, who engage in service, giving birth to a premature baby (<37 weeks gestation). *	unknown	10% reduction	Maternity services data
11. Reduction in number of women, who engage in	unknown	10% reduction	Maternity services data

service, giving birth to a low birth weight baby.			

Table 2: Key Performance Indicators; Appendix B of service specification

Key performance indicator	Number of women
Number of women identified as 'no desire to quit smoking'	Unknown – maternity services data
Number of these identified women who were contacted	Unknown – maternity services data
The number of women who were contacted that declined an education session	Unknown – maternity services data
The number of women who were contacted and accepted an education session	19 – supplied by LWL
The number of women who accepted an educational session who attended	10 – Supplied by LWL
The number of women who accepted the educational session and did not attend	9 – supplied by LWL
The number of women who accepted the educational session, attended and went on to quit smoking	4 – Supplied by LWL
The number of women who accepted the educational session, attended and did not go on to make a quit attempt	6 – Supplied by LWL

Table 3: Incentive scheme expenditure

Voucher amount	Number of vouchers given	Total payment
£50	10	£500
£10 first appointment	45	£450
£10 for CO validated	22	£220
£10 for CO validate at following appointments	19	£190
£40 for CO validated at 36 weeks	2	£80
£20 for 2 weeks postnatal	2	£40
TOTALS	**100**	**£1,480.00**

Summary and recommendations into next 6 months of project

This project started slowly with the first two months spent designing the NDTQs educational session, designing and printing the packs for the women, setting up the online account for the incentive vouchers and organising joint time between the Public Health Specialist Midwife (PHMW) and the Smoking in Pregnancy Lead (SIPL) to work together. Despite this, the referrals for the pregnant women who were identified as 'Thinking of Stopping' continued to come through and these were booked in and seen as normal with the added incentive vouchers. Once these were up and running,

the PHMW and SIPL started spending one afternoon a week discussing referrals and booking in NDTQs into clinic time. Unfortunately, as these women were not attending these appointments at the hospital, despite being sent clinical letters, this mean we were only able to see 3 NDTQs in the first quarter.

Following this, we changed to home visits and despite the resources needed to see these women at home, it did increase attendance rates and we were able to engage with these hard to reach women. Since starting the home visits, we have had a 90% attendance rate and the data has shown the outcomes this has had on these women thinking of stopping smoking or moving into a quit attempt. Once starting the home visits, it was clear to see why these women were not attending clinic appointments, for example lack of money for transport, social issues, disabled children, housing problems etc. These outcomes have shown that often these women may continue to smoke due to a lack of knowledge on the effects of smoking in pregnancy and the importance of an intervention like this to increase their knowledge. After starting the home visits, it became apparent that it was taking up more time than initial thought for the project and there were more NDTQs referred than there was time to see them, which shows the importance of having set time per week specifically for this work. Unfortunately, due to the PHMW leaving before the project has finished, we are unable to see the birth outcomes of these women we have engaged with at this time.

In summary, the past 6 months of this project has been a great success with us being able to engage with these women who would normally be left to smoke and are now starting to think about stopping smoking. Considering quarter one of the project saw only 3 NDTQs engage and the outlook was not good, we were able to turn it around and engage more of these women in their own homes where it was convenient for them, which shows the importance of spending the time on home visits. If initially, these women would be left to continue smoking throughout their pregnancies, this also shows the importance of offering education and knowledge in smoking during pregnancy to such women and the continuation of this project.

It would be essential to have both a PHMW and SIPL to coordinate this project going forward as both together can really support and enhance the outcomes of this project. The PHMW is essential for the running of the NDTQs due to the clinical intervention/health conversation held by her to engage these women to attend the initial education session. This has had a big impact on the outcomes of these women attending these sessions and going on to make a quit attempt or reduce their smoking and it is important to be able to deliver the maternity messages alongside the smoking risks. A set amount of similar time should be assigned between the two roles to ensure that collaborative working is going on throughout to be able to contact, engage and follow up the NDTQs as well as the TOS's. It is important not to forget the important effect the PHMW role also has had on the 'Thinking of Stopping' referrals as time spent between the two roles can feedback the outcomes of those referrals. This ensures that any women who have declined, are un-contactable or have stopped smoking after their initial CO screening are reported back to their community midwife through the PHMW and can be followed up if necessary. An increase in repeat referrals following this has been noticed.

Overall, the project has shown some impactful outcomes one of which has proven that engaging with pregnant women who are hard to reach and initially decline a referral are contacted and educated and encouraged to stop smoking seems to work. There are many case studies coming through with not only positive outcomes of stopping smoking but cases of harm reduction and improved birth outcomes.   It is unfortunate that it has come to a temporary end. Hopefully, the outcomes of this project in the first 6 months show the positive effect that this project can have on

these hard to reach pregnant women and the outcomes on their babies and that this project can continue in the near future.

SECTION C5

TEACHING AND TRAINING

Contents

Teaching
DVD
Commentary

Teaching DVD commentary

Watching a video of my teaching allowed me to evaluate and self-reflect on my own teaching style and identify areas of improvement for future teaching delivery. The DVD is a 10-minute section of a lecture delivered on 27th April 2016 on the MSc Health Psychology course: Responses to illness module. The lecture title was COPD and took place at the London Metropolitan University. I asked the students if they were consented to the lecture being filmed for my own learning experience. They had all agreed to this before the camera was turned on, (see DVD, page 358).

I chose the first 10 minutes to use for this commentary as I felt this time frame was when I felt most nervous and aware I was both being filmed and observed. It also showed my various teaching methods, including both tasks and visuals, such as pictures. I feel that I started well in that I introduced myself and got them involved by introducing themselves to me, as well as asking previous experience and knowledge in COPD. However, I feel that it was quite rushed and I did not leave enough time for reflection from the students in my enthusiasm to start the session. This is useful for me to see as it is not something I would have necessarily noticed without the video but now know to look out for it in future teaching sessions.

The beginning shows a slightly nervous, rushed tone and I mainly stayed in one place and did not move around very much. I also kept my notes in my hands whilst I was talking, which I feel I did because I was nervous and I was not sure what to expect from the students. By holding the notes in my hand, I felt more comfortable. However, I notice that from 1.50min in, I put my notes down and made more eye contact with the students and I also became more animated with my hands. I am aware I was standing still but I didn't feel I had the confidence to move around at the beginning. I think this was due to me feeling nervous at the beginning and without realising, felt more comfortable holding my notes and standing in one position. As I felt less nervous and more confident, I am pleased that I put my notes down and started to move around more as I think this was more effective for the students.

I used a big visual, the picture at 3.15mins to help to explain the effects of COPD, which I feel was a good aid to engage active learning. I also went straight in to a question – 'what causes COPD' at 4.18mins, which I feel was a great interactive start to get the students

engaged and actively thinking about the topic. However, during the first task at 7.55 mins, I am unsure as to what I should be doing during this time and I almost look awkward. I choose to stand in the same place for most the video and look between the projector screen and the computer screen or play with my notes. I think that when allowing the student's time to reflect their answers from the task, I could give them more time to think and reflect as I feel I rushed through it. I think for future sessions I know to relax more and not to feel so nervous or awkward during discussions times. I also feel that it is possible to move closer to them and get more involved with the discussions they should help understand if there is an area they don't understand.

As the recording continues, I feel that I become more confident, able to create more eye contact with the students and start to move around slightly. I felt that positive reinforcement in the form of praise during their answers and the use of open ended questions encouraged collaborative learning. If I were to deliver this lecture again I would ensure that I would slow down my speech and not rush through things as this can make it difficult for the students to understand what I am saying and take on the information I am giving them. I would also give the students more time to reflect on their answers and not be worried about silences and use this time for my own reflection as I feel that sometimes people can take longer to think of ideas and need more time to reflect. I did enjoy delivering this lecture, more than I thought I would and I am keen to practice and improve my teaching skills and reduce my nerves by delivering more teaching sessions in the future. I am to do this by taking as many opportunities as possible during the course and deliver as many lectures as I can to try to increase my experience and confidence in the area. I feel this will help me to develop my skills within teaching and training for possible opportunities in the future.

Teaching and Training Plan

Introduction

Teaching and training is an important competency for all healthcare professionals, including health psychologists, (HCPC, 2009. The lecture was titled: COPD and is part of level 7 module on Responses to Illness. The module's learning outcomes and assessment information are written in the module handbook Responses to Illness PY7016: Year 2015/16. This identifies the assessment for the module as a 3000-word systematic review and a 1500-word report on the impact of disease.

I chose to develop a teaching plan for the lecture in COPD due to my current placement in a stop smoking service. These two areas are very connected and I felt it was an area I would be confident to develop and teach about. I can provide knowledge on both psychological theories and methods and on chronic illnesses which are related to my current workplace. I regularly see and treat patients who have developed chronic illnesses, including COPD, due to smoking and so I feel that my understanding of health psychology in this topic would allow me to bring this experience and knowledge to the teaching session.

5.1a – Assess training needs

I assessed the learning needs by reviewing the module handbook which enabled me to understand how this lecture would fit within the module and review the learning aims, objectives and assessment. The lecture was attended by small group of four MSc Health Psychology students and was observed by a senior lecturer. I stood at the front of the room and the students were sat in front of me, I was also filmed for this teaching session and the camera was facing the lecturer (trainee health psychologist) at the front. All students were MSc Health Psychology students, which means they would already have a certain level of knowledge within psychology and particularly Health Psychology and have experienced various teaching methods throughout their educational background.

5.1b – Develop the structure and content

The teaching session provided information about COPD to the students and covered: what is it, how it is developed, available treatments, psychological aspects to patient and carers and

how health psychologists can help. This included times for discussion of topics and tasks to complete related to each topic. Whilst I was developing the teaching plan, I also considered that the students would have a background knowledge in Health Psychology and would have experienced different teaching methods and learning styles due to their educational background.

By looking at the Experiential Learning Theory, (Kolb, 1984) which understands that learning is influenced on experience and is not fixed or the same for everyone. It focuses on 4 stages of the learning experience, which is continuous, and shows that students will go through four main stages to achieve effective learning. These four stages include: being taught new information, reflecting on this new information, amending already existing information based on this new information and then applying this new information to the world around them. This would mean that the MSc students would have been exposed to this conceptualised learning in means of lectures, independent learning, assessment learning and peer/group led learning to develop their current knowledge and understanding of health psychology.

Learning theories used in developing teaching plan

Learning theories were originally started by Bruner, (1960) when thinking of the constructivist theories approach to learning and that it should always be learner-centred. He believed that by developing existing schemata that students should bring about change in thoughts and conceptions is useful when thinking about how students learn. Teachers should engage with the existing knowledge of the students and work on developing and challenging these. By working on developing the students understanding, it is possible for teachers to develop the activities to encourage students to desired learning outcomes. Learning should not just be about giving information but allowing the students to 'actively' learn and building on what they already know. This follows the idea that the MSc students will already have a baseline knowledge of Health Psychology and it is important to try to build on that to develop their understanding of the area of Health Psychology by allowing them to be active in their learning and joining in activities.

Following this, Honey and Mumford (1982) and as supported by Furnham (1992), the different learning styles of students were thought to include the following traits: activists, theorists, pragmatists and reflectors. It is thought that although students may have experienced various learning and teaching styles it cannot be assumed that each student shares or prefers the same learning styles or traits. This helps me to understand that when putting together a teaching plan, there is no 'correct' way to do it because every individual learns differently but to try and include various teaching methods to capture as many different learning styles. This was continued to be developed by Honey and Mumford, (1986) who went on to develop the Experiential Learning Theory and identified four learning styles: Divergent learners that work well in group, Assimilating learners that are good at forming theories, convergent learners that are practical minded and accommodating learners that prefer hands-on learning. This continues to show that it is important to adapt the teaching styles to accommodate all learning styles so that all students can take part in the learning process. Therefore, the teaching plan must have attempted to accommodate all learning styles to increase learning capacity. This was achieved by encouraging reflective learning through the experiences of others in the videos used and through open discussions. Additionally, Boling and Robinson (1999) argued that individual study can also play a significant role in learning process. Therefore, I chose to incorporate individual study via recommended reading of the relevant literature used during the lecture and the references for these were included in the PowerPoint presentation.

This continues with the idea of Ramsden et al, (1989), with the belief that students either learn at a deep or a surface level. It is important to allow the students to learn new information at a deeper level so that they are more likely to remember, process and apply the new information later. To do this, it is important for the students to reflect on what they have learnt and to engage in activities to be able to develop a new understanding. Students have reported that deeper learning is more effective and found to have more learning satisfaction from students, (Ramsden et al, 1989). It is important to try to include this type of learning within the teaching plan, to keep the students engaged in the topic and allow them to process the information. Therefore, I made sure I included group and individual tasks throughout the session to allow the students to think about the information given and have time to reflect on it to be able to process the information better. I feel that this gave them more time to create their own ideas on the subject, which helps them to remember the information better. This is

argued by Ramsden, (2003) that the idea that teachers want their students to be able to analyse new information and to be able to apply this new information outside of the classroom and ensuring a deeper learning is the way to do this. Again, this shows the importance of including a variety of methods to help students learn to allow for many different learning styles. This is to try to help all learners to change their understanding of the topic and each topic, (Marton and Ramsden, 1988). To ensure I covered as many learning styles as possible, I included different engagement tools, such as videos, group tasks and discussions.

5.1c – Select appropriate training methods, approaches and materials.

The lesson plan created (Appendix 1, page 335) considered the previous theories discussed and how best to facilitate the different learning styles of the students. I did this by including various teaching methods to try to increase the students' reflection. Kolb's experiential learning theory (Kolb, 1984) reports that using video clips, which included real life examples of the management and diagnosis of COPD, it was possible to ensure the students took part in reflective observation. My intention was to use these video clips to develop reflection and learning. The videos also added variety to teaching material presented to keep the students more engaged, they also facilitated activist and reflector learning styles by allowing students to immerse themselves in the patient's experiences of COPD. I also allowed time for discussion which will enable reflector style learning. The final version lesson plan used can be found in the appendix of this assessment. According to Fry et al, (2003) it is important to be aware of your own learning styles as this can affect the style of teaching each lecturer may use and therefore it is important to ensure that the lecture is based on the curriculum and teaching/learning and assessment for the module.

5.2a - Facilitate learning in health psychology

During the teaching session, the use of PowerPoint to deliver the new information about the theories were introduced via the text and images was used to facilitate theorist and pragmatic learning styles. However, as suggested by Honey et al., (1982) the pragmatic learner may benefit from an active learning approach. I believe that by using the videos to demonstrate real life examples, followed by discussion, facilitated the pragmatic learning. As suggested

by Meisel (1998) the use of multimedia resources such as videos assist in learning and increase retention of taught subject following teaching. I am aware that this may not have completely suited a pragmatic learning style as although students were able to view real- life examples of COPD, they were not being able to actively speak to the patients or ask them direct questions that they may have. They were encouraged to take part in discussions and ask questions related to COPD, the aetiology and treatments but only directed to myself or the other students. Unfortunately, they were not able to speak directly to a patient with COPD, however I feel that I did approach this time of learning style the best I could due to restrictions with time and availability.

5.3a - Select and implement appropriate assessment methods.

5.3b - Produce records of progress and outcomes

Furthermore, in my current role as a Stop Smoking specialist, I regularly deliver training to various population groups, such as pharmacists, health care assistants, GPs. During training, I ensure that I consider the trainee's background and pre-existing levels of knowledge. I ensure that the training sessions I deliver incorporate various teaching styles to suit various learning traits. This is to ensure the likelihood of trainee participation and most importantly to ensure learning is facilitated. For example, my training includes independent learning via completion of an online assessment as well as including skills practice learning implemented via group work within the training sessions to ensure that experiential learning in facilitated. They are then assessed for this and once completed and passed, receive a certificate. I feel that my experience with delivering to different student groups and regularly tailoring my training content and delivery has allowed me to develop the teaching plan for this lecture.

Ramsden, (2003) argues that an effective way of facilitating student learning is to continuously reflect on the outcomes of teaching sessions and the student's feedback to improve student learning. To ensure I would be able to do this, I asked the students to complete evaluation forms of the teaching at the end (Appendix 2, page 341) so that I can see from their point of view, what could be improved on to ensure they are finding the session effective. Following this, I was also observed by a senior lecturer to allow me to receive feedback on the content and delivery to allow me to reflect on how to improve in the future.

Based on previous teaching sessions I have delivered to university students, I feel that I have improved in my delivery. The first session I delivered, I was particularly nervous and unsure as to what to expect. I feel that I have improved on this and I was more confident, although I was still nervous. I think that I could be more confident and move around more, especially with the larger groups of students. In this lecture, there were only 4 students which helped me to feel more confident as it was more personal. I feel that I am less nervous at delivering a lecture in this environment, compared with a larger group, which I feel is something I can continue to practice and improve on.

5.4a - Evaluate the outcomes of training programme in health psychology.

As this was a set taught lecture, the learning outcomes to be used for the lesson plan are derived from the MSc health psychology module specification. The teaching aims of the lecture are to increase knowledge and understanding of Responses to Illness and COPD, the aetiology of COPD, symptoms and treatment and how to manage the condition using different behavioural and health psychology techniques. The teaching aims and outcomes are to be met via the use of a taught lecture using visual aids and summaries using a structured PowerPoint presentation and a projector. Interactive resources were also used in the form of videos were used to reinforce the students understanding of COPD in real-life and deepen the learning process. The main learning outcomes for this lecture were:

- To know what we mean by COPD, what causes it and how to prevent it
- To understand the process of diagnosis and how to manage COPD
- To be aware of the physical and psychological impact of COPD on both the patient and carers

Student Participation

Students were encouraged to participate throughout the session and questions were used throughout to stimulate discussion and promote further questions. These statements used included "are there any questions?" and "how do you feel after seeing the video?" Outside of these statements, opportunities to ask questions were dealt with as and when questions were proposed.

The lecture topic was one I have personal experience of due to my work placement in smoking cessation. I am regularly helping people to stop smoking and so I often treat patients with COPD at both the beginning and end stages and so I planned to include my experiences in the lecture plan. I feel this will facilitate experiential learning as well as encourage student participation and collaborative reflection. By including the videos of real-life stories of COPD, I hoped this would help the students to reflect on patient experience and the impact of such a chronic illness. I actively encouraged student engagement in the lecture by asking open ended questions and allocating time for questions, however I am aware that this may have been a sensitive topic from some especially if they have personal experience of COPD. I ensured that I discussed this at the beginning of the teaching session to make sure I understood the student's current experience and understanding of COPD. I also ensured that I did not pose direct questions towards particular students, instead I gave students the opportunity to reflect and feedback in their own time should they wish to without feeling pressured. Students were not asked or told to share their personal experiences, however, the students who did choose to comment chose to do so freely, in a way that promotes collaborative and reflective learning.

5.4b - Identify factors contributing to the outcomes of training programme

Feedback from the students was obtained via the use of evaluation forms asking how they rated: the overall lecture delivery, whether they felt the contents of the lecture met their learning objectives, evaluation of the contents and learning outcomes of each subtopic delivered and an opportunity to add further comments (Appendix 1, page 335). The evaluation forms used scale from "very good" to very poor". This allowed the student to evaluate each topic of the lecture, therefore helping to identify which components were most and least effective. I was particularly interested finding out how the videos are perceived as I felt these were quite effective at showing the effects of COPD in real-life.

Additionally, I felt that I was continuously measuring the learning outcomes of the lecture by regularly asking for clarification of the students understanding by asking questions and feedback on the different topics. I also ensured I maintained regular eye contact with the students and continuously monitored their feedback and body language to be aware of any effects or concerns from the lecture content or tiredness. Additionally, learning outcomes where measured via submitted coursework for this module.

5.4c - Identify improvements for the future design and delivery of training in health psychology

In conclusion, I feel that by designing this lecture plan, it has given me the skills to be able to plan and deliver future lesson plans to students. I feel that by doing this, I have managed to progress with my confidence and developed my presentation and delivery skills. It has given me the opportunity to try different teaching methods and include them to allow for any differences in student learning and this is something I can use for future lectures. I feel that with more practice, I will only become more confident and effective at my delivery of new information and learning within students. I was also able to effectively design and implement an evaluation form, which allowed me to gain the relevant feedback of the lecture to be able to improve on my lecture content and delivery in the future. I found this opportunity my biggest challenge yet with designing, delivering, filming and evaluating my first MSc lecture and I was quite nervous. Unfortunately, I do feel that the nerves show in my video and my reflective log when delivering, which I hope did not reduce how effective the lecture was for the students. I am looking forward to delivering teaching and training more often to increase my confidence and hopefully lead to a more effective lecture delivery.

References

Boling, N.C., & Robinson, D.H. (1999). Individual study, interactive multimedia, or cooperative learning: Which activity best supplements lecture-based distance education? *Journal of Educational Psychology*, 91(**1**), 169-174.

Bruner, J. (1960). *The Process of Education*. Cambridge, MA: Harvard University Press

Fry, H., Ketteridge, S. and Marshall, S., (2003). *A Handbook for Teaching and Learning in Higher Education Enhancing Academic Practice* (2nd ed). London: Kogan.

Furnham, A. (1992). Personality and learning style: A study of three instruments. *Personality and Individual Differences,* 13(**4**), 429–438.

Health and Care Professions Council (2009) Standards of proficiency; Practitioner psychologists.
http://www.hpcuk.org/assets/documents/10002963sop_practitioner_psychologists.pdf
(Accessed: 20/04/2016.)

Honey, P., & Mumford, A. (1982). *Manual of Learning Styles*. London: P Hone

Honey, P. & Mumford, A. (1986) *The Manual of Learning Styles*. Maidenhead, Peter Honey.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall

Marton, F. and Ramsden, P. 1988. "What does it take to improve learning?" In P.Ramsden (Ed.) *Improving Learning: New Perspectives,* 268-286. London: Logan.

Meisel, S. (1998). Videotapes: considerations for effective use of video in teaching and training" *Journal of Management Development.* 17(**4**), 251 – 258.

Ramsden, P., Beswick, D and Bowden, J., (1989). Effects of Learning Skills Intervention on First Year Students' Learning. *Human Learning.* 5, 151-64.

Ramsden, P., (2003). *Learning to teach in higher education.* London, RoutledgeFalmer.

Appendix 1

Lesson Plan and Programmes

Lesson Plan

Date: 27/4/16	**Time**: 2-4.30pm	**Duration**: 2.5 hours

University: London Metropolitan

Course: MSc Health Psychology	**Module title**: Responses to Illness: PY7016
No. of Students: 4	**Lecture title**: COPD

Lecture aims:
1. To deliver a lecture which effectively delivers the module learning outcomes for PY7016
2. To promote collaborative and reflective learning via the use of various materials (PowerPoint, video and sharing experiences)
3. To accommodate to the various learning styles needs of the students

Learning outcomes of lecture:
- To know what we mean by COPD and what causes it and how to prevent it
- To understand the process of diagnosis and how to manage COPD
- To be aware of the physical and psychological impact of COPD on both the patient and carers

Previous knowledge assumed:
All students were MSc level Health Psychology students and it is assumed they have an undergraduate level of knowledge and understanding of psychology

Materials and equipment needed:
- PowerPoint presentation on USB
- PC
- Projector
- Video clips/ speaker
- Lesson plan
- Lecture feedback/evaluation forms
- Camera (as this lecture is to be recorded)

Assessment method:
This is one lecture as part of a whole module. The assessment for this module is a 3000-word systematic review and a 1500-word report on the impact of disease.

Lesson Programme

Time	Subject matter/content	Activity	Resources
2pm	**Introductions**	Introduce myself and students to introduce themselves to me	A copy of the lecture slides will be given
2.05pm	**Lecture outline** – introduce learning outcomes and objectives • To know what we mean by COPD and what causes it and how to prevent it • To understand the process of diagnosis and how to manage COPD • To be aware of the physical and psychological impact of COPD on both the patient and carers	I will be explaining the lecture outline	Power point presentation
2.10pm	**COPD** – what is it, what causes it, symptoms • Chronic obstructive pulmonary disorder • Collaborative term for chronic bronchitis, emphysema and COAD • Caused by damage to the lungs • 90% via smoking – rest genetic, asthma, passive smoking, dust/fumes • Causes breathlessness	I will be explaining the outline of COPD	Power point presentation
2.20pm	**Task** – discuss symptoms and causes and how it may affect everyday life	Students will discuss together and feedback to myself	Power point presentation, group discussion
2.25pm	**Physical impact of COPD** – • Reduced mobility/energy/quality of life	I will explain the physical impact	Power point presentation
2.30pm	**Video** of a real-life story of the impact of COPD	To watch video and discuss the impact COPD can have on an individual	Youtube video, group discussion

Time	Content		
2.40pm	**COPD** – diagnosis, treatments and quitting smoking • Breathing tests – spirometry • Quit smoking!! • Inhalers, medicines, oxygen, pulmonary rehab	I will explain these topics further	Power point presentation
2.50pm	**Task** – discuss why it may be so difficult to stop smoking, regardless of a diagnosis of COPD	Group discussion and feedback on topic	Power point presentation, group discussion
2.55pm	**Living with COPD –** • Management – self care • Rest • Adaptations • Rehabilitation • Chest physio	I will explain how to manage COPD	Power point presentation
3.15pm	**Video** of real life story of how to manage COPD	To watch videos and discuss them	You tube videos x4 and group discussions
3.15pm	**Break**		
3.30pm	**Task** – discuss psychological impact of COPD	Students to discuss what they think the psychological impact of COPD would be	Group discussion

Time	Content	Method	Resources
3.35pm	**The psychological and social impact of COPD of patient and carers** • High prevalence of depression and anxiety • Unable to go out as much –reduced mobility • Embarrassed to go out/be seen (breathless, oxygen) • Worried what other people will think • Reduced oxygen can reduce cognitive functioning and reduce memory • Carers haven't got time/energy to work = less money and unable to go out as much, tend to have a lower health as well	I will explain the psychological impacts	Power point presentation
3.45pm	**Video** - real life story of COPD and the impact it can have	Students to watch the video and feedback on the content	Youtube video and group discussion
3.50pm	**Task** - Discussion about Health psychologist can help within the area of COPD	Students to discuss how they think Health Psychology can help within COPD	Group discussion
4.00pm	**Health psychology and COPD** • Health Promotion • Management of COPD • Intervention to stop smoking, get more active • Training health professionals who work with COPD patients	I will explain how Health Psychology can help within COPD	Power point presentation
4.10pm	**Summary, further reading, reference, Q&A**	Discuss topics further	Power point presentation
4.20pm	**Feedback evaluation forms**	To give out feedback evaluation forms and ask to give	Given evaluation forms

		back before they leave	
4.30pm	**Close**		

Appendix 2

Evaluation Forms

COPD

Please tick:

	Very Good	Good	Average	Poor	Very Poor
1. Overall, how would you rate the lecture?	✓				
2. How would you rate the following?					
a. The information about COPD	✓				
b. Aetiology of COPD		✓			
c. Treatments of COPD	✓				
d. Managing COPD	✓				
e. Psychological impact of COPD	✓				
f. Psychological impact of COPD on carers		✓			
g. Health psychology and COPD	✓				
3. How would you rate the presentor/facilitator?	✓				

4. Which part of the lecture did you find most useful?

> The explanation of condition

5. Which part of the lecture did you find least useful?

> All sufficient   -   group task

6. Did the lecture meet your expectations?

Yes ☑   No ☐

7. If no, please briefly explain why:

Please turn over.

COPD

Please tick:

	Very Good	Good	Average	Poor	Very Poor
1. Overall, how would you rate the lecture?	X				
2. How would you rate the following?	X				
a. The information about COPD	X				
b. Aetiology of COPD	X				
c. Treatments of COPD	X				
d. Managing COPD	X				
e. Psychological impact of COPD	X				
f. Psychological impact of COPD on carers	X				
g. Health psychology and COPD	X				
3. How would you rate the presentor/facilitator?	X				

4. Which part of the lecture did you find most useful?

Health psychology and COPD.

5. Which part of the lecture did you find least useful?

6. Did the lecture meet your expectations?

Yes ☒   No ☐

7. If no, please briefly explain why:

Please turn over.

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COPD

Please tick:

	Very Good	Good	Average	Poor	Very Poor
1. Overall, how would you rate the lecture?		✓	✓		
2. How would you rate the following?					
a. The information about COPD		✓			
b. Aetiology of COPD		✓			
c. Treatments of COPD		✓			
d. Managing COPD		✓			
e. Psychological impact of COPD		✓			
f. Psychological impact of COPD on carers		✓			
g. Health psychology and COPD		✓			
3. How would you rate the presentor/facilitator?		✓			

4. Which part of the lecture did you find most useful?

overview

5. Which part of the lecture did you find least useful?

too many videos.

6. Did the lecture meet your expectations?

Yes ☑   No ☐

7. If no, please briefly explain why:

Please turn over.

COPD

Please tick:

	Very Good	Good	Average	Poor	Very Poor
1. Overall, how would you rate the lecture?	✓	✓✓			
2. How would you rate the following?					
a. The information about COPD	✓				
b. Aetiology of COPD		✓			
c. Treatments of COPD		✓			
d. Managing COPD		✓			
e. Psychological impact of COPD		✓			
f. Psychological impact of COPD on carers		✓			
g. Health psychology and COPD	✓				
3. How would you rate the presentor/facilitator?	✓				

4. Which part of the lecture did you find most useful?

The videos and the tasks.

5. Which part of the lecture did you find least useful?

Repeating of information that was discussed in tasks

6. Did the lecture meet your expectations?

Yes ☑   No ☐

7. If no, please briefly explain why:

Please turn over.

8. What changes would you make to the training?

9. Do you feel confident in your understanding of COPD and how it applies to Health Psychology?

Yes ☑ No ☐

10. If not, what do you think could be included in the lecture to make you feel more confident?

Examples of health psychology in practice within lecture.

11. Please add any other comments you have on the content or delivery of the lecture:

Thank you for completing this evaluation form. Please note that the information you provided will be used to help the presenter improve future lectures.

8. What changes would you make to the training?

- be ⊕ welcoming to what students say

9. Do you feel confident in your understanding of COPD and how it applies to Health Psychology?

Yes ☑ No ☐

10. If not, what do you think could be included in the lecture to make you feel more confident?

11. Please add any other comments you have on the content or delivery of the lecture:

Thank you for completing this evaluation form. Please note that the information you provided will be used to help the presenter improve future lectures.

8. What changes would you make to the training?

Include how to work with people at the begining of COPD.

9. Do you feel confident in your understanding of COPD and how it applies to Health Psychology?

Yes ☑   No ☐

10. If not, what do you think could be included in the lecture to make you feel more confident?

More real examples on first stages of COPD.

11. Please add any other comments you have on the content or delivery of the lecture:

Thank you for completing this evaluation form. Please note that the information you provided will be used to help the presenter improve future lectures.

8. What changes would you make to the training?

None, pleasant and charming

9. Do you feel confident in your understanding of COPD and how it applies to Health Psychology?

Yes ☑ No ☐

10. If not, what do you think could be included in the lecture to make you feel more confident?

11. Please add any other comments you have on the content or delivery of the lecture:

It was super pleasing and very informative

Thank you for completing this evaluation form. Please note that the information you provided will be used to help the presenter improve future lectures.

Teaching and Training Evaluation

Introduction

This assessment involves a detailed reflection and evaluation on the delivery of a lecture on COPD. I delivered this lecture on 27th April 2016 to MSc health psychology students as part of the module on Responses to Illness. The learning outcomes and the lesson plan of this lecture can be found in the lesson plan assessment. Both assessments address the teaching and training competence of the Professional Doctorate in Health Psychology training.

Teaching and Training background

5.2a – Facilitate learning in Health Psychology

This lecture that I delivered on COPD made up part of my teaching and training assessment. The lecture was video recorded and observed by a senior lecturer and health psychologist from the university. The video recording was used to allow me to be able to reflect and evaluate my teaching delivery and how I can improve in the future. This was the second lecture that I have delivered solely at the university but only the first to post-graduate level. The students consisted of four MSc health psychology students.

Previously, I have delivered another lecture to undergraduate students in the dietetic and nutrition course at the London Metropolitan University on The Psychology of Health Behaviour. I was very nervous before delivering this lecture as it was the first one and to a large group of students. It helped to prepare me for this lecture as I knew that it wasn't as bad as I thought it would be and it was a much smaller group. I have also delivered training sessions to health care professionals on smoking cessation and how they can help others to stop smoking. I feel that this has allowed me to develop a broad range of experience in teaching and training in different areas.

As this was the first time I delivered a lecture to this group of students, I was unable to reflect and improve on feedback from previous lectures with them. However, I did give them evaluation forms to complete at the end so that I can still use their feedback to reflect and improve for next time. From previous teaching experience, I am aware that I get quite nervous when delivering a teaching sessions. This has various outcomes: my speech speeds up, my mouth goes very dry and means I have to cough more and my body language becomes

closed, which all means that there can be a disconnection between myself and the audience. It also means I tend to rush through the lecture, speaking too quickly and this ends up in the lecture finishing too early.

Regarding this lecture, I felt much less nervous and more confident about the content of the lecture. My mouth didn't go as dry and I planned more opportunities for pauses and reflection to encourage student engagement and learning. I also felt I spoke clearer and was more relaxed during the delivery. However, I did still tend to rush and the students were not as interactive as I had planned for them to be, meaning the lecture still finished ahead of time. I may have been slightly more anxious due to this being my first recorded lecture and being observed by a senior lecturer as well. In comparison, when delivering training sessions as part of my every day role in my work placement and previous employment, I do not feel as nervous or anxious. Although I did design the slides for this lecture, it is only a one off, whereas the training sessions within my current employment cover the same topic areas and allows me to become more familiar with the content. I also feel that when delivering training sessions, it is less formal and in my own office environment, which I know well. Whereas, the format of a lecture is very formal and in a new environment to myself. I also feel that because I am a trainee health psychologist, this may also impact on my confidence in teaching a lecture to post-graduate students, as I feel that my knowledge and ability to teach may be scrutinised as I am not yet qualified. This may sub-consciously create a feeling of apprehension and anxiety, despite having prepared for the lecture and fully understanding the topic.

5.4a – Evaluate the outcomes of training programmes in health psychology

Student feedback was collected via the use of lecture evaluation forms and was collected at the end of the lecture. These forms allowed students to rate and comment on the lecture as well as each subtopic. The forms were anonymised to allow students to be as open as possible. In reflection, I found using evaluation forms useful. It allowed me to gain feedback directly from the students and how they felt the lecture went and how it might be improved for them. This will be useful when planning the content for any future lectures. Lecture evaluation forms can be found in the appendix. The students marked the overall lecture as either very good or good on each subtopic covered. Unfortunately, as I had not taught this

group before, they were unable to compare any improvements from previous sessions. However, it will give me a second opinion on areas for improvement.

One of the feedback areas for improvement included the use of videos and that they felt there were too many within the lecture. However, a positive comment from a different student was that they felt the videos were useful and that was a positive part of the lecture to them. I think this shows how different all students learning processes are and that it is so difficult to please every student in what works for them, (Honey & Mumford, 1986). I feel that I may have used more videos than were necessary but for a 2.5-hour lecture, I wanted to feel that I had been an effective teacher to all different learning styles and it has been shown that videos are an effective teaching material, (Kolb, 1984; Meisel, 1998). However, in future I will try to limit the number of videos used and think of other ways to engage the students.

Other feedback areas for improvement included: it was noted by a student that it would have been useful to have some examples of the early stages of COPD and how to work with patients with COPD with more practical examples. I think this is a very valid point and is something that can be improved on for future lectures. I did go through the signs and symptoms of COPD and how it can be diagnosed in early stages, however this could have been delivered in more depth to help aid their understanding of this. Also, although I did discuss health psychology and COPD and how we might work with them, this could also have been delivered in more detail. There was also a negative comment about repeating information that was discussed in tasks. I felt this was important to confirm what was discussed in the tasks in some way, this can be in case some points were not discussed or thought of to help them to change their understanding of the topic the best way possible, (Marton & Ramsden, 1988).

On a positive note, there were no comments about nerves or lack of presentation skills, which was something that I was worried about due to this only being my second lecture. Two out of the four students found that the most useful part of the lecture was how health psychology can help within COPD. Another comment from a student was that I could be more welcoming to what student's say, which could mean they would have liked me to be more

enthusiastic during their responses to questions. However, another student commented that I was pleasant and charming and that the lecture was 'super pleasing and very informative'. I feel this shows how different students learning styles are again, in that some people enjoy different teaching methods to others. It is important to be engaging with all learning styles and this is something I will improve on in future teaching to try to be more enthusiastic and welcoming to comments from students.

Feedback from the senior lecturer was like the students in that the use of videos were good but there might have been too many, the use of tasks was good but there were times when I was repeating the information in the tasks and the slides and I could have been more 'authoritative' when delivering. I think this is linked with confidence, in that I was still very nervous with delivering a lecture and I found it challenging to move around more in the room and speak more authoritatively. I feel that this is something I am keen to improve on and I feel that with practice, I will continue to increase my confidence at delivering lectures.

Reflection and Future Teaching

5.4b - Identify factors contributing to the outcomes of training programme.

Towards the end of the lecture I witnessed the students become more engaged in the lecture and group tasks as they became more familiar of what will be asked of them, which I feel could have been my increasing confidence throughout the lecture. I feel that the discussions throughout the lecture effectively supported the learning objectives. I believe the increased student engagement levels were because I began to feel more at ease with the teaching, this become apparent with my body language. I began to move closer to the students and further away from the desk in front of me. I felt that this may have been due to me needing to use my notes less as I began to relax, I remembered what I had practised better and I knew I could talk without needing them. By incorporating a break in the middle, I feel that the students relaxed slightly and became more alert knowing it was near the end. I think that this shows the importance of confidence when delivering a lecture to come across convincing to the students and to help facilitate their learning and confidence in you. This is important to remember for the future if it helps to engage the students more effectively.

I felt that I was accommodating to a vast range of learner traits, (Honey & Mumford, 1982): by incorporating video and PowerPoint presentations as well as sharing real life examples of helping COPD patients to stop smoking and how important this has been on their lives within my work placement, (Romanelli et al, 2009). I also included tasks, which meant the students had to discuss their ideas about the different effects of COPD on and individual's life and share these back to the class. I was aware this was only a small teaching group so it was difficult to incorporate group tasks but I did encourage group discussion and paired worked and raised numerous discussion points. I also used videos to simulate group activities and highlight discussion points.

I felt that the learning objectives were effectively met as this is reflected in the student evaluation feedback forms, whereby all four students stated that they felt confident in their understanding of COPD and the effects it can have on patients and their families and the importance of health psychology within this. I feel that this shows I was unbiased in my methods of teaching to not allow my preferred learning style to alter my teaching style and allow for differences in learning, (Fry et al, 2003).

5.4c - Identify improvements for the future design and delivery of training in health psychology.

I felt the experience on preparing, delivering and reviewing this lecture has shown me that although there are areas of improvement required with regards to organising the content better, I can create and following a teaching plan. I can use an engaging teaching style which resulted in effective learning outcomes and positive feedback. This has increased my confidence in my teaching abilities and the effectiveness of the teaching materials I used within a lecture. However, this teaching session has made me more aware that I am prone to finishing teaching sessions early due to my increased nerves and rushing through moments for important feedback to reduce the silences and this is something to work on in the future.

I have become more aware of students different learning styles (Kolb, 1984; Honey & Mumford, 1986)) and the impacts of collaborative learning through presented materials and reflection, (Ramsden et al, 1989). I have learned the importance of this type of learning and

the need to incorporate various learning materials within a lecture, such as group tasks and videos, (Meisel, 1998). I have learnt that although I may always be nervous beforehand, I manage to come across more confident and less nervous than I think. However, I need to be able to pace myself as this can impact on understanding and time management. This can be achieved through incorporating regular pauses into lesson plans to allow for student and lecturer reflection and not to be concerned or worried about silences, but allow them.

In summary, as outlined by Kolb (1984) I felt that the lecture covered the four main stages of learning for the students: being taught new information, reflecting on this new information, amending already existing information based on this new information and then applying this new information to the world around them, so that they could learn this new information. Following this, I also felt it also followed Bruner, (1960) in the constructivist theories approach to learning in that it should always be learner-centred. I tried to ensure that the activities tried to encourage students to the desired learning outcomes and promote active learning. I also felt that the lecture acted as active experimentation for me, allowing me to reflect, conceptualise and learn for future teaching experiences, (Ramsden, 2003). When delivering future lectures, I will assess the suitability of materials and ensure there is more group work and less videos. I will also ensure the materials are clear and not repeated. Upon reflection, I learned that I can deliver an effective lecture which results in positive feedback from students. This experience has also taught me the importance of being comfortable with silences with students to allow them time to reflect on the new information, (Ramsden, 1989). It has also shown me that although I might be nervous inside, it doesn't show as much outside. In future teaching sessions, I aim to stick to the timings of the lesson plan as much as possible. I feel more confident about delivering future teaching sessions and I am looking forward to increasing my experience in this further throughout my training.

References

Bruner, J. (1960). *The Process of Education*. Cambridge, MA: Harvard University Press

Fry, H., Ketteridge, S. and Marshall, S., (2003). *A Handbook for Teaching and Learning in Higher Education Enhancing Academic Practice* (2nd ed). London: Kogan.

Honey, P., & Mumford, A. (1982). *Manual of Learning Styles*. London: P Hone

Honey, P. & Mumford, A. (1986) *The Manual of Learning Styles*. Maidenhead, Peter Honey.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall

Marton, F. and Ramsden, P. 1988. "What does it take to improve learning?" In P.Ramsden (Ed.) *Improving Learning: New Perspectives,* 268-286. London: Logan.

Meisel, S. (1998). Videotapes: considerations for effective use of video in teaching and training" *Journal of Management Development.* 17(**4**), 251 – 258.

Ramsden, P., Beswick, D and Bowden, J., (1989). Effects of Learning Skills Intervention on First Year Students' Learning. *Human Learning.* 5, 151-64.

Ramsden, P., (2003). *Learning to teach in higher education.* London, RoutledgeFalmer.

Romanelli, F., Bird, E., & Ryan, M., (2009). Learning styles: a review of theory, application and best practise. *American Journal of Pharmaceutical Education.* 73(1),

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