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Women's initial preferences for self-sampling tests at home for cervical cancer screening in the UK: A mixed-methods analysis of demographic and behavioural factors

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ABSTRACT

Objectives: To identify the demographic and behavioural factors associated with cervical screening preferences if a choice of test, health professional-collected samples or self-sampling at home, is implemented in the UK; and the behavioural barriers to self-sampling at home.
Study design: A mixed-methods study of secondary data.
Methods: We used data from the Cancer Research UK CAM + survey (February 2023) and performed a quantitative regression analysis to examine the associations between demographics, behavioural factors, screening behaviours, and screening preferences of the UK population aged 25–64. Unadjusted and multivariable adjusted logistic regression models were used. Qualitative content analysis was used for free text comments on behavioural barriers to self-sampling and mapped onto the Theoretical Domains Framework.
Results: Analytical sample (n = 906). Test preference: Self-sampling (45.4 %); health professional-collected samples (41.1 %); and no test preference (13.6 %). Preference for self-sampling was significantly associated with older groups and psychosocial barriers (motivation and physical opportunity) regarding health professional-collected samples. Individuals with no test preference were the youngest and older groups, from low social grade and living with a partner. Behavioural barriers included test reliability and ability to do the test (motivation) and information needs (capability).
Conclusions: Home seems a suitable setting for self-sampling, and it could alleviate many barriers faced to health professional-collected samples. Yet introducing test options did not allow all individuals a compelling basis for preference. Specific behaviour change techniques for identified barriers are proposed for this group. Ultimately, if choice is offered, future screening guidelines should consider how to address individuals with no test preference.

1. Introduction

Cervical screening uptake in the UK has been persistently declining in the past two decades and is now well below the optimal performance standard (80 %) of population coverage, which includes people with a cervix aged 25–64 years. Coverage in England fell from 73.9 % in 2013 to 68.7 % in 2023,[1] with a similar decreasing pattern observed in Northen Ireland, Wales and Scotland.[2] Younger age groups (25–49) have shown the steepest decline, and with a 33 % difference in screening coverage between the least and most deprived areas.[3] Currently, England, Wales, and Scotland invite women (aged 25–64) every 5 years to test for HPV first and followed by cytology triage if high-risk HPV is found. If both tests are positive they are referred to colposcopy. In Northen Ireland, screening for 25–49 years old is offered every 3 years and those aged 50–64 are invited every 5 years.[28–31] Following the WHO Global Strategy for cervical cancer elimination,[4] the UK National Screening Committee has recently recommended the use of self-sample kits to under-screened people (never attended or 6 months overdue), giving commissioners the decision to implement self-sampling when they consider it can have an impact on uptake.[5] In England this will be

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available from 2026. Self-sampling will be offered opportunistically (GP practices), via a direct mail-out (letter and kit) or by offering both a direct mail-out and an opportunistic offer.[5]

A key criterion for selecting a screening procedure is that the test should be acceptable to the eligible population. Self-sample tests could tackle some of the challenges reported with health professional-collected samples (HPCS) (pain, embarrassment, previous bad experience),[6] and evidence indicates that self-sampling is generally acceptable in women[7,32,33] and can increase uptake in underserved groups.[8] UK and international studies have identified some challenges with self-sampling, primarily, women's lack of confidence in taking a vaginal sample and concerns about the reliability of the test compared to the one performed by health professionals[9–11] as well as a lack of trust for the introduction of self-sampling as an option.[12]

Screening preferences prior test exposure or information can elicit insights into the behavioural determinants for different groups. Preferences are relevant and worth exploring because of the internal deliberate process of value representations that takes place before choice commitment is made.[13] Information about screening test preferences (or lack of preference) would be relevant to help develop theory-informed behaviour change interventions to better support implementation of new screening practices. The Theoretical Domains Framework (TDF) was selected for the survey analysis, as it was developed to identify determinants of behaviours in health contexts where new evidence-based guidelines have been or are about to be implemented in practice. It consists of 14 behavioural domains which can be further mapped onto the COM-B model, capability (psychological and physical), opportunity (social and physical), and motivation (automatic and reflective).[14] Additionally, the TDF can be linked to evidence-based behaviour change techniques (BCTs) which enable the development of intervention components targeting specific behavioural barriers.[15]

Our aim was to identify the initial screening preferences, if a choice of cervical screening test was offered, in different sociodemographic groups and the capabilities, opportunities or motivations associated with their declared preferences and no preference.

Research questions.

(1) What are the demographic and behavioural factors associated with cervical screening preferences if a choice of test (HPCS or self-sampling at home) is implemented in the UK? (quantitative analysis)
(2) What are women's behavioural barriers to self-sampling at home, if this test were to be implemented in cervical screening? (qualitative analysis)

2. Methods

We conducted a mixed methods study consisting of a secondary data analysis on the Cancer Research UK Cancer Awareness Measure Plus (CAM+) survey[16] using quantitative regression analysis to examine the association between demographic characteristics, behavioural information, and screening preferences of the UK eligible population; and a qualitative content analysis of free text comments. The CAM + survey included 48 questions (excluding demographics), was delivered online, and recruitment took place via a YouGov Plc's panel between 02–February 22, 2023. In all, 2387 adults (18+) completed the survey.

2.1. Analytical sample

Inclusion criteria: (i) Participants who answered the survey question on cervical screening preference, and (ii) identified as female, non-binary/genderfluid/agender or answered 'prefer not to say' for the question about gender.

Exclusion criteria: Participants who were not eligible for screening (would not 'take part in any cervical screening at all') or answered 'preferred not to say' for the question on whether they are eligible for screening.

2.2. Measures

We have selected the following survey items for analysis based on the literature and also in consideration of the sample size with available data in each. Questions (Q. n) are summarised below, and full questions presented to participants are available in Survey questionnaire (supplementary data).

2.2.1. Outcome variable

Q. 39_a1 and 39_a2, Choice of screening modality, with the following three answer options (1) HPCS; (2) self-sampling; (3) Don't know (no preference). In all analyses, the multi-categorical outcome variable on cervical screening test preference was dichotomised, with either assessing the odds of self-sampling preference over HPCS, or assessing the odds of no preference ('don't know') over clear preference.

2.2.2. Independent variables (see detailed information on the categorisation of these variables in the 'survey questionnaire' supplementary material)

1. Socio-demographic factors:

Age range; ethnicity; disability; social grade; marital status; education; and UK country.

2. Behavioural factors:
   - Q.34: HPV awareness.
   - Q.30_4_2: Beliefs about NHS provision for cancer services (staff and equipment).
   - Q.38: Barriers to standard cancer screening (HPCS).
     Screening behaviours.
   - Q.36: Past screening behaviour (attendance).
   - Q.37: Intention to screen in the future.

2.2.3. Free text comment box

Q.39_b: An optional open question asking participants who responded 'don't know' to screening preference about information that would help them decide.

2.3. Data analysis

To examine whether there were any statistically significant differences in cervical screening test preferences between socio-demographic groups and across other characteristics of the sample, we used unadjusted and multivariable adjusted logistic regression models. In the multivariable adjusted models, the Odds Ratios (AORs) were adjusted for age groups, disability, social grade, marital status, education level, ethnic groups (with 5 categories) and UK nation. In all analyses, the cervical screening test outcome variable was dichotomised, with either assessing the probability of self-sampling preference over HPCS or assessing the probability of no preference ("don't know") over clear preference.

For free text comments, content analysis was conducted and mapped into the TDF for behavioural analysis[14,17] to identify the potential barriers to implementing new self-sample tests. We used a deductive analysis approach, where researchers familiarised with the data by reading all entries. Themes and beliefs statements were identified for each response and coded to specific constructs in the 14 TDF. The initial coding was conducted by YE, and EC independently coded 20 % of the responses. Discrepancies were solved by reviewing descriptors of TDF until reaching analytical consensus.

Additionally, we also applied the TDF to the analysis of the independent variable, barriers to cervical screening, where 18 statement options in the survey where ascribed to a particular construct and domain by YE and subsequently reviewed by EC and DW, with

discrepancies resolved after group discussion. In both instances of TDF mapping, we considered the domains' frequency and linked them to the source of behaviour in the COM-B model to allow identification of important drivers of stated preferences.

In the process of data integration, we aimed for 'expansion' as qualitative data allowed for a behavioural interpretation of the no preference group, thus explaining the nature of the associations observed in the quantitative data.[34]

3. Results

From the 2387 adults who completed the survey, we excluded those who responded 'male' to the sex question (n = 1125); those who did not respond to the question on cervical screening preference, stated 'I wouldn't take part in any cervical screening at all', or 'preferred not to say' (n = 356). Therefore, the analytical sample for this study consisted of 906 participants. Table 1 presents the sample characteristics.

3.1. Quantitative results

3.1.1. Descriptive statistics

Table 1 shows the key socio-demographic characteristics of the analytical sample, as well as the distribution of the participants' answers regarding questions on preference, awareness, beliefs and screening behaviour in relation to HPV risk and screening practices. The proportion of individuals who indicated a preference for self-sampling at home was similar to those who would prefer HPCS, with 45.4 % and 41.1 %, respectively. There were 13.6 % who selected they did not know which sampling option they would prefer (no test preference). Most participants were White Europeans, lived in England, and distribution of social grade was even. Most participants were aware that HPV infection is a risk factor for cervical cancer; two-thirds of the sample attended cervical screening last time they were invited and nearly three quarters of the sample planned to attend next time they are invited.

A list of potential behavioural barriers for HPCS is presented in Table 2. Barriers were categorised according to the COM-B model, alongside the proportion of participants who selected each barrier. The most common barriers were previous experience of pain (14.9 %) and concern that it might be painful (11.3 %). Overall, barriers regrading Motivation were the most mentioned, with Automatic motivation the most reported (26.1 %), followed by Reflective motivation (19.5 %). Although this is likely partly because Motivation barriers formed the majority of the available options.

3.1.2. Self-sampling preference and no test preference

3.1.2.1. Demographic factors. Table S1 presents the proportion of participants who indicated self-sampling preference, and the likelihood of preferring self-sampling at home over HPCS across socio-demographic groups. The results indicate that women over the age of 45 years old were significantly more likely to prefer self-sampling at home (45–54 years: AOR 1.70, $p = 0.013$; 55–64 years: AOR 2.09, $p = 0.002$) over HPCS compared to younger age groups. Apart from this difference by age groups, sampling preferences showed no statistically significant differences across other socio-demographic categories.

Table S2 shows the proportion of participants who indicated no preference for any type of screening test, and the likelihood of this answer across socio-demographic groups. The youngest (18–24 years) and oldest age groups (45–64 years) were significantly more likely to state no preference for test options compared to young adults (25–34 years). According to the multivariable adjusted logistic regression models, participants in the lower social grade category (AOR 1.76, p = 0.008), those living with a partner (AOR 1.68, p = 0.037) or living in Scotland (AOR 2.08, p = 0.044) were also more likely to state no preference for screening test.

Table 1
Sample characteristics (n = 906).

Variable groups	Variable	Category	n	%
Cervical screening preference		Self-sampling at home	411	45.4
		By doctor/nurse in health care setting	372	41.1
		Don't know (no preference)	123	13.6
Socio-demographic factors	Age group	18–24	123	13.6
		25–34	220	24.3
		35–44	194	21.4
		45–54	212	23.4
		55–64	157	17.3
	Disability	No disability	586	64.7
		Limited a little	154	17.0
		Limited a lot	83	9.2
		No data on disability	83	9.2
	Social grade	ABC1 (high)	458	50.6
		C2DE (low)	448	49.5
	Marital status	Lives alone (single, divorced, widowed)	314	34.7
		Lives with partner (married, civil partner)	426	47.0
		No data on marital status	166	18.3
	Education	Low	180	19.9
		Medium	349	38.5
		High	377	41.6
	Ethnic group (5 categories)	White	765	84.4
		Mixed	52	5.7
		Asian	48	5.3
		African Caribbean	36	4.0
		Other	5	0.6
	Ethnic group (2 categories)	White	765	84.4
		Any other ethnic group	141	15.6
	UK country	England	605	66.8
		Wales	38	4.2
		Scotland	56	6.2
		Northen Ireland	207	22.9
Behavioural factors	Aware of HPV as cancer risk	Yes	612	67.6
		No	84	9.3
		Don't know/not sure	210	23.2
	Believes there is not enough NHS staff or equipment to see, test and treat all the people with cancer that need to be seen, tested and treated	Agrees	741	81.8
		Disagrees	78	8.6
		Don't know or prefer not to say	87	9.6
	Attended screening last time invited	Yes	604	66.7
		No	147	16.2
		Not eligible/not invited	20	2.2
		Don't know, not says or missing	135	14.9
	Plans to attend screening next time invited	Yes	669	73.8
		No	57	6.3
		Not eligible	30	3.3
		Don't know, not says or missing	150	16.6

*The CAM + survey was recruited using quotas to be representative of the UK for age, gender, and social grade. The sample was boosted in Northern Ireland, North-East England and among Ethnic minority respondents to allow for more robust analysis among these subgroups.

3.1.2.2. Preference and behavioural factors, screening behaviours and barriers to HPCS. Self-sampling at home preference: Table S3 presents the results regarding those who would prefer self-sampling at home across the behavioural targets. While there was no statistical differences in

Table 2
Barriers to HPCS and the proportion of participants who mentioned them.

Barrier *(Thinking about the last time you were invited for cervical screening, did any of the following put you off going?)*	COM-B component	% of participants who indicated that this barrier applies to them (n = 763[a])
I have found cervical screening painful when I have been before	Automatic motivation	14.9
I was worried that cervical screening might be painful	Reflective motivation	11.3
I was too embarrassed to go for cervical screening	Automatic motivation	10.5
I have had a bad experience of cervical screening in the past	Automatic motivation	9.2
I didn't want a man to carry out the screening test	Physical opportunity	7.1
I was too busy to go for cervical screening	Physical opportunity	4.9
I was too frightened of what the test might find	Reflective motivation	4.6
I found it difficult to get an appointment	Physical opportunity	4.3
I didn't have any symptoms of cervical cancer	Psychological capability	3.5
I don't think that I am at risk of cervical cancer	Psychological capability	3.2
I worried about putting extra strain on the NHS/health services	Reflective motivation	2.5
I was too afraid of having treatment if I was found to have cancer	Reflective motivation	2.2
After thinking about cervical screening, I decided that the harms of taking part outweigh the benefits	Reflective motivation	2.1
I had other more important things to worry about than cervical screening	Reflective motivation	2.0
I was worried about catching COVID-19 if I went for screening	Reflective motivation	1.3
I could not afford to cover the costs related to having an appointment (e.g. transport, childcare, reduced pay/earnings)	Physical opportunity	1.2
I worried my pay/earnings would be affected if I needed to have further tests or treatment	Reflective motivation	0.9
I had symptoms that might have been related to COVID-19	Physical opportunity	0.5
Any barrier in the automatic motivation category		26.1
Any barrier in the reflective motivation category		19.5
Any barrier in the physical opportunity category		14.9
Any barrier in the psychological capability category		6.0

[a] The following participants provided no answer to the "barriers" question: a. Answered "not eligible" or "have never been invited" to the question "Did you go cervical screening the last time invited?" (n=20). b. Age 18-24 (n=123).

awareness of HPV cancer risk, there were considerable differences depending on beliefs on NHS capacity and screening behaviours. Individuals who agreed that NHS staff or equipment is insufficient to see, test and treat all the people with cancer were significantly more likely to prefer self-sampling at home (47.5 %) compared to those who have no concerns about the NHS service capacity (35.9 %). Women who did not attend cervical screening when invited last time (AOR 7.44, p= <0.001) or were not planning to attend in the future (AOR 30.00, p= <0.001) were also significantly more likely to prefer self-sampling at home.

The proportion of individuals who selected a preference for self-sampling at home and their barriers to HPCS according to COM-B components is shown in Table 3. For all four components (Reflective motivation, Automatic motivation, Physical opportunity, and Psychological capability) preference for self-sampling at home (vs HPCS) was found to be more common. The odds ratios suggested that most of these differences remained statistically significant even after adjustment for all socio-demographic factors. The strength of the association was particularly strong for Automatic motivation related barriers (AOR 7.38; p= <0.001).

No test preference: Table 4 presents the results regarding those who indicated no preference about their test option, across the following behaviours: cancer risk awareness, beliefs on NHS capacity, and screening attendance. Women who responded 'don't know' when asked if HPV was a risk factor for cervical cancer and those who didn't know about the NHS service capacity, were more likely to state no preference for the screening test options.

Table S4 shows the percentage of women who did not indicate a preference for a test depending on whether they mentioned specific

Table 3
Proportion of participants who prefer self-sampling at home, and the likelihood of preferring self-sampling over HPCS across identified COM-B components (barriers to HPCS).

Variable	Category	% Prefer self-sampling at home	Likelihood of preferring self-sampling at home over HPCS					
			Model 1			Model 2		
			OR	**95 %CI**	**p-value**	**AOR**	**95 %CI**	**p-value**
Reflective motivation	no	40.2	1	(reference)		1	(reference)	
	yes	66.4	**3.16**	**(2.07–4.78)**	**<0.001**	**3.61**	**(2.31–5.62)**	**<0.001**
Psychological capability	no	44.4	1	(reference)		1	(reference)	
	yes	60.9	1.78	(0.93–3.40)	0.079	1.95	(1.00–3.81)	0.050
Automatic motivation	no	35.1	1	(reference)		1	(reference)	
	yes	74.4	**6.94**	**(4.53–0.64)**	**<0.001**	**7.38**	**(4.73–1.51)**	**<0.001**
Physical opportunity	no	42.2	1	(reference)		1	(reference)	
	yes	63.2	**3.23**	**(1.98–5.27)**	**<0.001**	**3.80**	**(2.28–6.34)**	**<0.001**

Model 1: unadjusted.
Model 2: adjusted for all socio-demographic factors presented in Table 3 (Supplementary material).

Table 4
Proportion of participants who had no test preference and the likelihood of no preference across behavioural factors and screening behaviours.

Variable	Category	% indicated no test preference	Likelihood of no test preference over clear preference in test type					
			Model 1			Model 2		
			OR	**95 %CI**	**p-value**	**AOR**	**95 %CI**	**p-value**
Aware of HPV as cancer risk (binary)	Yes	10.5	1.00	(reference)		1.00	(reference)	
	No	14.3	1.43	(0.73–2.77)	0.294	1.30	(0.65–2.57)	0.460
	Don't know or not sure	22.4	**2.47**	**(1.63–3.74)**	**<0.001**	**2.31**	**(1.50–3.56)**	**<0.001**
Believes that there is not enough NHS staff or equipment to see, test and treat all the people with cancer that need to be seen, tested and treated	Agrees	12.7	1.00	(reference)		1.00	(reference)	
	Disagrees	7.7	0.57	(0.24–1.36)	0.205	0.54	(0.22–1.32)	0.175
	Don't know or prefer not to say	26.4	**2.47**	**(1.47–4.17)**	**0.001**	**2.70**	**(1.55–4.69)**	**<0.001**
Attended screening last time invited	Yes	13.6	1.00	(reference)		1.00	(reference)	
	No	8.2	0.57	(0.30–1.07)	0.079	0.58	(0.30–1.11)	0.099
	Not eligible/not invited	25.0	2.12	(0.75–5.99)	0.156	2.32	(0.68–7.94)	0.179
	Don't know or not says or missing	17.8	1.38	(0.83–2.27)	0.209	3.70	(0.93–14.63)	0.063
Plans to attend screening next time invited	Yes	12.7	1.00	(reference)		1.00	(reference)	
	No	5.3	0.38	(0.12–1.25)	0.111	0.40	(0.12–1.33)	0.134
	Not eligible	26.7	2.50	(1.08–5.79)	0.033	2.10	(0.84–5.24)	0.113
	Don't know or not says or missing	18.0	1.51	(0.93–2.42)	0.090	2.35	(0.90–6.16)	0.082

Model 1: unadjusted.
Model 2: adjusted for all socio-demographic factors presented in Table 4 (Supplementary material).

barriers related to the four COM-B components. While there were some differences in terms of proportions, these differences were not statistically significant in the unadjusted or multivariable adjusted logistic regression models.

3.2. Qualitative results

3.2.1. Behavioural barriers to self-sampling at home

The no test preference group were asked to comment (in a free text box) if they would require specific information to help them decide. Out of the 123 responses, 61 provided comments that were coded and categorised onto the TDF and COM-B model. A total of 73 behaviours were identified and are summarised in Table 5, alongside the frequency they were mentioned in the TDF column. The three most identified behaviours corresponded to Beliefs about consequences (concerns about trust in self-sampling tests, reliability and accuracy in comparison to the HPCS) followed by Knowledge (information needs) and Beliefs about Capabilities (concern about doing the self-sample correctly).

4. Discussion

In this secondary analysis of the Cancer Research UK CAM + survey, we explored the relative contributions of demographic and behavioural factors, and screening behaviours associated with women's initial preferences for cervical screening tests, self-sampling at home by requesting a kit (opt-in) or HPCS. Most respondents (45.4 %) preferred

Table 5
Behavioural analysis of no test preference comments[a].

Example Quote	Themes/beliefs statements	Theoretical domains framework (TDF).	COM-B
- *Knowing the self-sampling option produces as effective and truthful a result as having it done by a professional.* - *Depends how reliable it is doing it yourself!* - *Assurance that my own swabbing would effectively collect the cells needed to determine accurate results.* - *Depends on the comparative accuracy of each.* - *Would self-testing also pick up things that a test and visual inspection in person might find.*	Test reliability	Beliefs about consequences (n = 31)	Reflective motivation
- *I would need more information about self-testing.* - *Clear instructions for home DIY kit and how reliable the results are compared to GP appointment.*	More information Don't know	Knowledge (n = 17)	Psychological capability
- *I just don't know what I would choose.*			
- *I would worry that the home kit would not be done properly.* - *Not sure I'd do it right and maybe at the doctors would spot something I can't see?*	Concerns of doing it correctly	Beliefs about capabilities (n = 14)	Reflective motivation
- *If it was just urine sample, I would do it at home.* - *Open to either.*	Preference for urine sample Willing to try both tests	Intentions (n = 6)	Reflective motivation
- *I would ask my doctor.*	Asking others/HCP: social support form HCP	Social influences (n = 2)	Social opportunity
- *If I knew the nurse/doctor would be female, I would prefer that option to a home test.*	HCP availability	Environmental context and resources (n = 2)	Physical opportunity
- *More information about how the home test kit works, I have a muscle dysfunction so don't know if I could conduct the test sufficiently well.*	Concern about physical impairment	Physical skills (n = 1)	Physical capabilities

[a] Q: You said you don't know which option you would select. Is there any information that would help you make up your mind.?

self-testing at home, whilst 13.6 % had no preference, and 41.1 % preferred HCPS. Similar to other studies in high-income countries, home appears to be suitable setting for self-sampling.[7] In terms of demographic factors, those that preferred to self-sample at home were significantly more likely to be aged 45 years and over, thus raising questions about the acceptability of this setting for those aged (25–49 years old) who have shown a continued decline in attendance.[3] Those who did not state a preference were more likely to be from a lower social grade, young (18–24, without screening experience) and older groups (45–64 years old).

A preference for self-sampling at home was more common among participants who mentioned psycho-social barriers to taking part in HPCS the last time they were invited and remained statistically significant after adjustment for socio-demographic factors. The latter indicates the prominence of behavioural barriers in screening preference across all demographics, which could alleviate many barriers to uptake. Respondents who did not attend cervical screening when last invited or were not planning to attend in the future were also significantly more likely to prefer self-sampling at home as observed in other studies.[10,18] Automatic motivation barriers showed a strong association with self-sampling preference. Although self-sampling preference in this group (irregular attenders) should be taken with caution, given the known gap between intention and behaviour, there is scope to tap into health promotion strategies focusing on preference-based decisions. First, best practice guidance should be followed to reduce discomfort e.g. use of lubricant and the appropriate size speculum. Second, screening invitations could address evidence-based behaviour change techniques (BCT) such as 'reduce negative emotions' and focus on the advantages of self-sampling over the emotional barriers (Automatic motivation) associated with non-attendance to traditional screening.

The percentage of participants with no preference for a test (13.6 %) was similar to the acceptability study conducted within the HPValidate[19] where 12.2 % were undecided if both tests were available in the future, despite participants having experienced self-sampling at the GP practice followed by HPCS. In a FV urine self-sampling trial, 37.0 % stated no preference, thus, pointing to a group with no preference for self-sampling at home that is maintained after test exposure.[20] Choice theory tends to consider no preference as a common response when people encounter difficult decisions to make for which a reassessment of options takes place before commitment.[21] Yet this is more common when options are perceived as similar, and none of them superior, which largely counter the health narrative of self-sampling screening.

Recent studies have confirmed that individuals may prefer a recommendation to support their choices,[22] as well as the need for support to consider their preferences by a shared decision-making approach.[12] Participants who commented about the information needed to help them decide on a preferred test suggest different behavioural barriers (Table 5) including knowledge about the test and how to do it, trust on the test performance (reliability, evidence-based), and self-efficacy (confidence to do the test correctly). Different strategies would be required for each of these behavioural components. Given that trust in the new test (reflective motivation) was the most commented factor, it may imply an active role for health professionals, that is, the BCT communication through a 'credible source' (verbal or written) to support decisions and also reassurance (test validity) a critical component of acceptability.[23–25] Regarding knowledge, health communication needs to ensure clarity in the instructions and should address the BCT 'pros and cons' by highlighting advantages/disadvantages of self-sampling (automatic motivation barriers) alongside the comparative reliability of both tests (reflective motivation). A related behaviour is self-efficacy, where there is evidence that women who lacked self-efficacy to self-sampling were less willing to do the test.[26] BCTs that have proven to work to improve self-efficacy are 'instruction on how to perform the behaviour' and 'verbal persuasion about capability',[15] in this case, by health professionals, family and women network, partner involvement and peer support alongside culturally sensitive health education and instructions.[26]

Finally, the urine test, although being one of the survey options, had fewer though positive comments in comparison with the vaginal swab. Notably, findings from an LGBTQIA + survey, showed that the urine test is the most preferred test amongst transmen.[27]

4.1. Limitations

There are some potential limitations when interpreting our results. Our analytical sample was not representative of the UK population as the questionnaire was completed online, therefore limiting participation to internet access and digital literacy. The sample size in several socio-demographic subgroups (e.g. gender) was small, resulting in low statistical power to detect significant associations for test preference. Qualitative data in surveys is generally brief, lacking in context, thus reducing identification of other behavioural domains that could be amenable to change. Finally, the survey asked about two different self-sampling modalities (vaginal swab and urine), but responses did not differentiate preference between them.

4.2. Conclusions

According to preferences reported in this survey, home seems a suitable setting for self-sampling. Individuals preferring self-sampling at home, and those with no test preference have different demographics and behavioural determining factors. Those with a preference for self-sampling at home were significantly associated with older groups and with psychosocial barriers (motivation and physical opportunity) regarding HPCS. Individuals with no test preference were the youngest and older groups, from a low social grade and living with a partner. Their comments on behavioural barriers included test reliability and ability to do the test (motivation) and information needs about self-sampling (capability). Introducing test options did not allow individuals in this group a compelling basis for preference, i.e. none of the tests were perceived as superior, leading to a deferred choice confirmation. Having no preference between new/traditional cervical screening tests seems a relevant and rather unanticipated finding compared with the optimistic hope brought by the self-sample collection, and one for future screening guidelines to contemplate. Studies have shown that lack of preference remains significant after experiencing HPCS and self-sampling tests. There is thus a need for more underpinning evidence on the nature of the difficulties involved in making a choice in different population groups. Additionally, it is recommended to effectively tailor communications to support decision making as well as to consider alternative choice strategies if evidence confirms that no preference or deferred choice results in no screening uptake.

Ethical statement

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Declaration of competing interest

None declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhe.2025.106109.

References

1. NHS England. Cervical screening programme, England - 2022-2023 [NS]. https://digital.nhs.uk/data-and-information/publications/statistical/cervical-screening-annual; 23 November 2023. Accessed June 10, 2025.
2. CRUK. Cervical cancer screening coverage. https://crukcancerintelligence.shinyapps.io/EarlyDiagnosis/; July 2023. Accessed March 13, 2025.
3. OHID Public health profiles. Cancer screening coverage: cervical cancer (aged 25 to 49 years old). https://fingertips.phe.org.uk/search/cervical%20cancer#page/4/gid/1/pat/15/ati/502/are/E09000033/iid/93560/age/299/sex/2/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/eng-vo-1. Accessed April 8, 2025.
4. WHO. *Global Strategy to Accelerate the Elimination of Cervical Cancer as a Public Health Problem*. Geneva: Licence: CC BY-NC-SA 3.0 IGO; 2020. https://www.who.int/publications/i/item/9789240014107. Accessed June 20, 2025.
5. GOV.UK. UK National Screening Committee. Adult screening cervical cancer. https://view-health-screening-recommendations.service.gov.uk/cervical-cancer/; March 2025. Accessed June 10, 2025.
6. Wilding S, Wighton S, Halligan D, West R, Conner M, O'Connor DB. What factors are most influential in increasing cervical cancer screening attendance? An online study of UK-based women. *Health Psychol Behav Med*. 2020 Aug 7;8(1):314–328. https://doi.org/10.1080/21642850.2020.1798239.
7. Nishimura H, Yeh PT, Oguntade H, Kennedy CE, Narasimhan M. HPV self-sampling for cervical cancer screening: a systematic review of values and preferences. *BMJ Glob Health*. 2021 May;6(5), e003743. https://doi.org/10.1136/bmjgh-2020-003743.
8. Lim AWW, Deats K, Gambell J, et al, YouScreen Joint Steering Group. Opportunistic offering of self-sampling to non-attenders within the English cervical screening programme: a pragmatic, multicentre, implementation feasibility trial with randomly allocated cluster intervention start dates (YouScreen). *eClinicalMedicine*. 2024 Jul 16;73, 102672. https://doi.org/10.1016/j.eclinm.2024.102672.
9. Williams D, Davies M, Fiander A, Farewell D, Hillier S, Brain K. Women's perspectives on human papillomavirus self-sampling in the context of the UK cervical screening programme. *Health Expect*. 2017 Oct;20(5):1031–1040. https://doi.org/10.1111/hex.12544.
10. Drysdale H, Marlow LA, Lim A, Sasieni P, Waller J. Self-sampling for cervical screening offered at the point of invitation: a cross-sectional study of preferences in England. *J Med Screen*. 2022 Sep;29(3):194–202. https://doi.org/10.1177/09691413221092246.
11. Nelson EJ, Maynard BR, Loux T, Fatla J, Gordon R, Arnold LD. The acceptability of self-sampled screening for HPV DNA: a systematic review and meta-analysis. *Sex Transm Infect*. 2017 Feb;93(1):56–61. https://doi.org/10.1136/sextrans-2016-052609.
12. Williams D, Clarke E, Lifford KJ, et al. Recommendations for a communication strategy to support informed decision-making about self or clinician sampling for cervical screening in the UK: qualitative study. *Health Expect*. 2025;28, e70191. https://doi.org/10.1111/hex.70191.
13. Lee D, Daunizeau J. Choosing what we like vs liking what we choose: how choice-induced preference change might actually be instrumental to decision-making. *PLoS One*. 2020 May 18;15(5), e0231081. https://doi.org/10.1371/journal.pone.0231081.
14. Atkins L, Francis J, Islam R, et al. A guide to using the theoretical domains framework of behaviour change to investigate implementation problems. *Implement Sci*. 2017 Jun 21;12(1):77. https://doi.org/10.1186/s13012-017-0605-9.
15. Human and Behaviour Change Project. Theory and technique tool. https://theoryandtechniquetool.humanbehaviourchange.org/; 2022. Accessed February 12, 2025.
16. UK Data Service. Study number 9112 - cancer research UK cancer awareness measures, February 2023. The data collection is available to UK data service registered users subject to the end user licence agreement. https://ukdataservice.ac.uk/. Accessed July 13, 2024.
17. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005 Nov;15(9):1277–1288. https://doi.org/10.1177/1049732305276687.
18. Lynge E. Self-collected versus clinician-collected samples for HPV testing. *Lancet Oncol*. 2019;20(2):170–171. https://doi.org/10.1016/S1470-2045(18)30934-3.
19. Marlow L, Waller J. Acceptability of self-collecting vaginal samples in HPValidate and attitudes to self-sampling as a choice in future cervical screening. https://www.qmul.ac.uk/fmd/media/smd/documents/research/hpv-self-collection-test-acceptability-report-hpvalidate-lot2.pdf; December 2023. Accessed May 23, 2025.
20. Davies JC, Sargent A, Pinggera E, et al. Urine high-risk human papillomavirus testing as an alternative to routine cervical screening: a comparative diagnostic accuracy study of two urine collection devices using a randomised study design trial. *BJOG*. 2024 Oct;131(11):1456–1464. https://doi.org/10.1111/1471-0528.17831.
21. Dhar R. Consumer preference for No-Choice option. *J Consum Res*. 1997;24:215–231.
22. Marlow L, Drysdale H, Waller J. Attitudes towards being offered a choice of self-sampling or clinician sampling for cervical screening: a cross-sectional survey of women taking part in a clinical validation of HPV self-collection devices. *J Med Screen*. 2024 Oct;9, 9691413241283356. https://doi.org/10.1177/09691413241283356.
23. Nothacker J, Nury E, Roebl Mathieu M, Raatz H, Meerpohl JJ, Schmucker C. Women's attitudes towards a human papillomavirus-based cervical cancer screening strategy: a systematic review. *BMJ Sex Reprod Health*. 2022;48:295. https://doi.org/10.1136/bmjsrh-2022-201515.
24. Tatar O, Thompson E, Naz A, et al. Factors associated with human papillomavirus (HPV) test acceptability in primary screening for cervical cancer: a mixed methods research synthesis. *Prev Med*. 2018;116:40–50. https://doi.org/10.1016/j.ypmed.2018.08.034.
25. Tatar O, Haward B, Zhu P, et al. Understanding the challenges of HPV-based cervical screening: development and validation of HPV testing and self-sampling attitudes and beliefs scales. *Curr Oncol*. 2023 Jan 15;30(1):1206–1219. https://doi.org/10.3390/curroncol30010093.
26. Camara H, Zhang Y, Lafferty L, Vallely AJ, Guy R, Kelly-Hanku A. Self-collection for HPV-based cervical screening: a qualitative evidence meta-synthesis. *BMC Public Health*. 2021 Aug 4;21(1):1503. https://doi.org/10.1186/s12889-021-11554-6.
27. Hawkins R, Davies-Oliveira JC, Malcolmson L, Thorpe E, Crosbie EJ. Acceptability of self-testing methods for cervical screening in the LGBTQIA+ community. Available at: https://gmcancer.org.uk/wp-content/uploads/2022/10/43.-Acceptability-of-self-testing-methods-for-cervical.pdf; 2022.
28. NHS England. Your guide to NHS cervical screening. https://www.england.nhs.uk/long-read/your-guide-to-nhs-cervical-screening/; October 2025. Accessed November 13, 2025.
29. NHS Wales. Public Health Wales. Cervical screening Wales. https://phw.nhs.wales/services-and-teams/screening/cervical-screening-wales/; 2025. Accessed November 13, 2025.
30. NHS inform. Cervical screening (smear test). Information about cervical screening (smear tests) in Scotland. https://www.nhsinform.scot/healthy-living/screening/cervical-screening-smear-test; 2025. Accessed November 13, 2025.
31. HSC Public Health Agency. Cervical cancer screening. https://www.publichealth.hscni.net/directorate-public-health/service-development-and-screening/cervical-cancer-screening; December 2023. Accessed November 13, 2025.
32. Guetterman TC, El Khoury C, Tariq M, et al. Acceptability of home-based urine self-collection for cervical cancer screening among women receiving care at the Arab community center for economic and social services in Michigan. *Cancer Med*. 2025 Feb;14(4), e70714. https://doi.org/10.1002/cam4.70714.
33. Vinson AH, Norrid C, Haro EK, et al. Cervical cancer screening in women with physical disabilities. *JAMA Netw Open*. 2025 Jan 2;8(1), e2457290. https://doi.org/10.1001/jamanetworkopen.2024.57290.
34. Fetters MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs-principles and practices. *Health Serv Res*. 2013 Dec;48(6 Pt 2):2134–2156. https://doi.org/10.1111/1475-6773.12117.