What do young women below national screening age in England think about cervical cancer and cervical screening? A qualitative study

DOI:
10.1111/jocn.16012

Document Version
Accepted author manuscript

Citation for published version (APA):

Published in:
Journal of Clinical Nursing

Citing this paper
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What do young women below national screening age in England think about cervical cancer and cervical screening? A qualitative study

Accepted for publication in Journal of Clinical Nursing, August 2021

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Abstract

Aims and objectives: To explore what women aged below the national screening age in the UK know and think about cervical cancer and cervical screening.

Background: The efficacy of cervical cancer screening is well established. However cervical screening attendance in the United Kingdom has decreased, with especially low rates at the first screening opportunity at age 25. Research has not yet explored knowledge and beliefs underpinning young women’s intention to screen before first screening invitation.

Design: Qualitative exploratory study.

Methods: Qualitative email interviews were undertaken with 16 participants, using questions derived from the Health Belief Model. Data were analysed using template analysis. The COREQ were followed.

Results: Analysis generated three themes; (1) Learning about cervical cancer and cervical screening: sources of information and (missed) opportunities; (2) Young women know screening is important – but they don’t always know why; (3) Screening intentions: a cost/benefit analysis of the available information.

Conclusions: Young women had varied knowledge and beliefs about cervical cancer and screening which were underpinned by several sources of information available to them. Most women expressed an intention to attend screening when invited, however some participants were unsure, with low screening-based knowledge and low perceived susceptibility of cervical cancer identified as key barriers. Social media, familial interactions, and interventions within education were highlighted as being suited to interventions aimed at increasing cervical cancer and screening based knowledge in young women.

Relevance to clinical practice: Findings suggest that women below screening age could be better informed about cervical cancer and screening. Tailored interventions addressing common concerns
and misconceptions around screening may be acceptable to young women and could help to promote screening attendance at first invitation.

**Key Words**: Cervical Cancer; Cervical Screening; Young Women; Health Belief Model; Qualitative; Email Interviews; Template Analysis
Background

Cervical screening is an extremely effective prevention method for cervical cancer: 83% of all cervical cancer deaths are estimated to be prevented when screening is regularly attended (Landy, Pesola, Castañón & Sasieni, 2016). In the United Kingdom (UK), women aged between 25 and 64 years are offered cervical cancer screening free of charge by the National Health Service (NHS) as part of the national cervical screening programme. Women are automatically invited by letter to their first appointment aged 24 years and 6 months to ensure screening coverage by age 25. Screening is offered at four year intervals until age 49, and every five years for women aged 50-64 (NHS, 2018; NHS, 2020). For specific patient groups, for example women with human immunodeficiency virus screening is offered annually (National Institute for Health and Care Excellence, 2021). The UK has implemented further cervical cancer prevention methods. Since 2008 (and 2019 for boys), girls and boys aged 12-13 years are offered the human papillomavirus (HPV) vaccine (NHS, 2019). As vaccination prevents approximately 70% of cervical cancers, screening is still required (NHS, 2019).

Over 3000 cases of cervical cancer are estimated to be diagnosed each year in the UK, with 854 deaths annually (Cancer Research UK, 2021). Incidence is increasing in women below the age of 30. In 2020, Cancer Research UK reported a 54% increase in cervical cancer incidence in women aged 25-29. This increase is concerning when paired with figures showing only 71.9% of women invited for screening attend, with lowest attendance amongst 25 to 29 year olds (NHS Digital, 2019; Jo's Trust, 2019). In particular, attendance is low for women invited for their first screening appointment. Initial uptake amongst 25 year olds has been reported as less than 30% in some regions such as Manchester (a major city in the northwest of England) (Kitchener et al., 2016). Attempts to increase first cervical screening attendance have had rather limited effects (Kitchener et al., 2016; Kitchener et al., 2018), with targeted approaches proposed as important for improving attendance in different groups of non-participating women (Marlow, Chorley, Haddrell, Ferrer, & Waller, 2017).

A number of studies have explored reasons surrounding women’s choice to attend cervical screening in the UK. Lack of knowledge surrounding screening has been shown to be a key predictor
of nonattendance (e.g. Lovell, Wetherell and Shepherd (2015) found that women unaware of recommended intervals between screening were less likely to attend than informed women). Other barriers include the potential for embarrassment, fear of pain, worry about results, and practical barriers such as ‘not getting round to going’ or arranging childcare (e.g. Wilding et al., 2020). These barriers may be universally shared, including women living in low and middle income countries (e.g. Devarapalli, Labani, Nagarjuna, Panchal, & Asthana, 2018).

Research has explored barriers to cervical screening attendance amongst particular subgroups of women in the UK. In a study exploring barriers among women aged 50–64 years from low socio-economic status and ethnic minority groups, Marlow, McBride, Varnes, and Waller (2019) identified a range of reasons for non-attendance including: discomfort, embarrassment, concern about the procedure and results, negative perceptions of health professionals, idiosyncratic beliefs, and previous negative experiences. Marlow, Chorley, Rockliffe, and Waller (2018) found past negative screening experiences were prominent for women who decided to not attend screening, whereas practical barriers were cited among women who intended to, but had not been screened. Reasons for non-attendance may vary with age. Waller, Jackowska, Marlow, and Wardle (2012) demonstrated that older women make an active decision not to be screened, whereas younger women are more likely to intend to be screened but not attend, and are more likely to have low awareness surrounding screening.

Although non-attendance is prevalent in young women invited to their first cervical screening appointment (Jo’s Trust, 2019), there has been little research focusing on this age group. In particular, there is very limited research exploring the knowledge and attitudes women in the UK hold about cervical cancer and screening prior to the age of 25. In focus groups with pre-screening aged women, Sadler, Albrow, Shelton, Kitchener, and Brabin (2013) found that barriers to first screening attendance included low awareness of the purpose and procedure of screening, believing screening is unnecessary due to low perceived susceptibility of cervical cancer, and reports of negative experiences from others. In focus group discussions about the HPV vaccination with UK school-aged
women, around half of participants did not know that HPV vaccination does not negate the need for cervical screening attendance (Hilton & Smith, 2011).

The Health Belief Model (HBM) (e.g. Rosenstock, 1974; Rosenstock, 1990) is a theoretical framework that has been extensively used to investigate screening behaviors. The HBM posits that the likelihood of an individual performing a particular health behavior can be assessed across six constructs: perceived severity of condition; perceived susceptibility; benefits and barriers to carrying out the behavior; cues to action; self-efficacy (Rosenstock, 1974). The HBM has demonstrable utility as a framework for predicting cervical screening participation (Tanner-Smith & Brown, 2010), and has been used to structure qualitative research surrounding cervical cancer screening knowledge and beliefs in American college age women (Sundstrom, Brandt, Gray, & Pierce, 2018).

The aim of this study was to use an exploratory qualitative approach to investigate what young women in the UK who have not yet received their first invitation to attend cervical screening know and think about cervical cancer and screening. To create tailored approaches to increase attendance, we need to understand what knowledge and beliefs may be underpinning decisions surrounding participation.

**Methodology**

**Design**

An exploratory qualitative approach was utilised, to aid the investigation of a topic with limited research thus far (Hunter, McCallum, & Howes, 2019). Whilst recognizing participant experience as subjective and shaped by context (a relativist epistemology), the ‘limited realist’ position (King & Brooks, 2017) taken in this study also assumes that meaning can be shared and that qualitative research findings can have potential relevance in wider settings (a realist ontology).

**Participants**

Purposive sampling was used to recruit 16 female undergraduate students aged between 18 and 24 years who had not yet received an invitation to attend cervical screening. Participants were
recruited using an online University of Manchester BSc Psychology study recruitment system. Participating students were rewarded with ‘Student Experiment Participation Scheme’ credits. This scheme aims to provide students with optional first-hand experience of taking part in psychological research. Participants were aged between 18 and 21 years (mean 18.8 years) and identified as a range of ethnicities including White British, British Persian, Indian, Pakistani, Chinese, and Romanian. None had attended a cervical screening procedure, and 10 recalled having all three HPV vaccinations (4 were unsure of vaccination status, 1 participant decided against vaccination, and 1 participant was not offered vaccination).

**Data Collection**

Data were collected using asynchronous semi-structured email interviews (author initials). Email interviews allow participants to feel comfortable discussing the topic in their own environment (Ratislavová & Ratislav, 2014). This may facilitate greater honesty and detailed responses (Meho, 2006). The ability to control time of response to email interview questions, allows the construction of thoughtful and well-formed replies, enhancing data quality (Gibson, 2010).

Data collection was undertaken by a female researcher [SG] with supervision from JB, an experienced female researcher and senior lecturer with expertise in qualitative research within health psychology. The data collecting author [SG] was an undergraduate student within the 18-21 age range of participants. This author had participated in qualitative research training and had experience in collecting qualitative data. The correspondence between interviewer and participant gender, age, and occupation may have influenced the research, for example facilitating openness and understanding, as well as avoiding a power imbalance. For example, the participants knew that the data collecting researcher had also participated in the ‘Student Experiment Participation Scheme’. During data analysis the author was likely to be sensitized to topics viewed as pertinent to herself as well as participants (for example, anxiety surrounding pain or embarrassment during cervical screening).

The topic guide was developed by one author [SG], and piloted with the second author [JB], to check interview flow and question clarity. Finalised questions were structured around the
constructs of the HBM and explored participants’ knowledge, and beliefs surrounding cervical cancer and screening (displayed in Table 1). For each question, several prompts were available to be used to ensure understanding and encourage rich, detailed responses. In addition, individualized questions, prompts and responses were also used in direct reply to participants’ responses. This built rapport and allowed for expansion on interesting answers, as well as clarification of raised points. The use of such follow up questions is described by Meho (2006) as valuable for gaining rich data from email interviews.

<table>
<thead>
<tr>
<th>Question</th>
<th>Represented HBM Construct</th>
</tr>
</thead>
<tbody>
<tr>
<td>“When thinking about cervical cancer, what thoughts and emotions come to mind?”</td>
<td>Context Building Question</td>
</tr>
<tr>
<td>“What beliefs and knowledge do you have regarding cervical screening”</td>
<td>Perceived Threat (Susceptibility &amp; Severity)</td>
</tr>
<tr>
<td>“What do you believe are the most important reasons for young women to attend cervical screening?”</td>
<td>Perceived Benefits</td>
</tr>
<tr>
<td>“What do you believe would be the most unpleasant things about cervical screening?”</td>
<td>Perceived Barriers</td>
</tr>
<tr>
<td>“In what ways could young women be encouraged to attend cervical screening?”</td>
<td>Cues to Action</td>
</tr>
<tr>
<td>“When you turn 25, how confident are you that you will attend cervical screening? Why is this?”</td>
<td>Self-Efficacy</td>
</tr>
</tbody>
</table>

Participants were instructed via an introductory email to spend approximately ten minutes responding to each question, resulting in participation lasting approximately one hour. The introductory email invited participants to ask questions about the research, to build rapport prior to data collection. Along with introductory and debrief emails, interviews spanned across 22 days; with one question sent to each participant every three days. Participants were asked to respond within two days to each email, and two reminder emails were available to use if responses were not received from participants.
Quality Checks

Throughout data collection researcher [SG] wrote field notes to assist data analysis and aid discussion of data sufficiency. The relevance of data saturation as an appropriate notion in qualitative research is contested. Data saturation is difficult to reconcile as an appropriate concept in exploratory qualitative work of this type (see Braun & Clarke, 2021). Data sufficiency was regularly reviewed to ensure that data obtained was sufficiently rich and insightful to ensure analysis met the aims of the study. The Consolidated Criteria for Reporting Qualitative Research (COREQ) were followed (Tong, Sainsbury, & Craig, 2007; Supplementary File 1).

Ethical Considerations

Ethical approval was granted by the University of Manchester Research Ethics Committee (Insert Reference) and all participants provided written (online) informed consent before taking part. Data were collected in 2018, and analysed during the 2019/2020 academic year.

Data Analysis

Interview data were transferred from email to a Microsoft Word Document, anonymized and analyzed thematically using Template Analysis (Brooks et al, 2015; King & Brooks, 2017) by both authors. Template analysis is compatible with a limited realist position and allows, when useful, for the identification of ‘a priori’ themes in advance of analysis; these are areas of interest identified as relevant to the research focus of the study (Brooks et al., 2015). Template analysis has been successfully used in previous health-related qualitative research where analysis was structured using a pre-existing theoretical framework (e.g. Brooks et al, 2013).

Analysis followed the procedural steps described by author et al. (2015). After initial familiarization, the full data set underwent preliminary coding and segments of data identified as relevant to the research question highlighted and assigned initial codes. Coding at this stage was undertaken with a number of a priori themes (the constructs of the HBM) in mind. King & Brooks (2017) advise that a priori themes in template analysis should be regarded as tentative and open to
revision: they are intended as a means of guiding initial coding, rather than as fixed themes which must necessarily be located in the data. Initial codes were then organized in to meaningful clusters, whereby the \textit{a priori} themes acted as top-level themes of an initial template. The initial template was iteratively modified until the template adequately captured the data. This template was then applied to the full data set. The final template comprised of three top-level themes which encapsulated the initial \textit{a priori} themes of HBM constructs.

Quality checks (viewed as appropriate for the research design and philosophical position) were employed throughout analysis. Authors independently coded transcript extracts and then compared and discussed coding and initial template development in relation to \textit{a priori} themes. An audit trail of initial and subsequent templates was created to record the development and associated decisions surrounding final template generation.

\textbf{Results}

Three themes are presented: (1) \textbf{Learning about cervical cancer and cervical screening: sources of information and (missed) opportunities}; (2) \textbf{Young women know screening is important – but they don’t always know why}; (3) \textbf{Screening intentions: a cost/benefit analysis of the available information}. Participant quotes are presented to illustrate themes.

\textbf{Learning about cervical cancer and cervical screening: sources of information and (missed) opportunities}

All participants were familiar with the terms ‘cervical cancer’ and ‘cervical screening’. In the UK, all 12-13 year olds are offered the HPV vaccine and vaccination usually happens in the school setting (NHS, 2019). Although participants were aware this vaccination was related in some way to cervical cancer, they reported having received little clear explanation when receiving the vaccination (e.g. “Having the HPV jabs in high school we were never really taught why – only that we were strongly advised to get it” P10). Participants did not recall being given information linking this
vaccination with future related health behaviors, including screening. Several participants believed that the HPV vaccination offered a ‘teachable moment’ to introduce young women to information about cervical cancer and cervical screening:

When I was at school, without the information from home, [the HPV vaccination] was just known as “the cancer/HPV injection” and I wouldn’t have really had an idea of what it was. Therefore I think schools could explain more because if you’re old enough to get the injection surely, in my opinion, you’re old enough to have some more information as to what the injection is for (P14)

[The HPV vaccine] would be a good opportunity to teach them about [cervical cancer] as well because if they are about to get a vaccination against something, they will think it is more important to hear about what it is for and why they need to be protected. If they were just given a talk about cervical cancer they might just brush it off and not think it will affect them, but if it is in the lead up to their vaccination I believe they will value the information they are given a lot more (P3)

In the quote above the participant refers to ‘information from home’. With little information reportedly available in school settings, communication with close others was a primary source of information about screening. Participants reported they were aware of older female family members (most often mothers) having attended cervical screening. For some, attending screening was understood as an important and necessary health behavior and positioned as a family ‘norm’ (e.g. one participant reported how her family has always “stressed the importance of getting [cervical screening] done at the recommended regular intervals” P12). In stark contrast, another participant described the very different (and highly pejorative) views held by her family in relation to cervical cancer and screening:

Why on earth would you want to do that? What you want to sleep around and have multiple partners and be a slut? That is the only way you get it [cervical cancer] because it does not run in our family (P16)
While some participants described communication with close others which had or which clearly intended to guide and support their own future health (screening) behaviors, more often the information participants had about screening was from anecdotal accounts of others’ attendance at screening. Often, these were not reassuring:

Growing up I have heard so many things about cervical screenings from older family members ranging from the use of instruments to scrape the inside of the cervix to the doctor having to clamp you open and it makes me nervous to have it done when I am 25 (P8)

In contrast, social media was highlighted as a further source of reassuring information about cervical screening, providing what one participant described as a “true perspective of the procedure” (P8), encouraging attendance. Participants suggested information posted by well-known (and trusted) individuals on platforms they interacted with as part of their everyday lives was well received:

Via Instagram I saw various female celebrities post about getting a smear test. This spreads awareness…and if young females see their role models or people they admire promoting cervical screening they might see this as an opportunity to either go on and research cervical cancer further or get a cervical screening booked (P7)

**Young women know screening is important – but they don’t always know why**

All participants understood cervical screening attendance as a health behavior broadly seen as something women should engage in, and similarly ascribed themselves to the view that attending screening is something women “should” do. However, participants’ explanations and understanding of why cervical screening was necessary varied considerably. Some participants were aware of the asymptomatic development of cervical cancer and described screening as an important tool to facilitate fast detection and treatment of abnormalities resulting in a reduced chance of cancer development and progression, and a higher survival rate. These participants understood screening attendance as a positive way to manage their own health and a means of reassurance, offering the rare opportunity to see ‘what is going on’ inside their own body:
I believe the tests are really important, and are done to catch the development of abnormal cells as early on as possible, in order to start treatment and prevent any serious damage or spreading of the cancer, as survival rates are fairly high if it's caught early…I think knowing that any changes in their cells would be detected early before it develops into anything more serious can give women more peace of mind, and help them feel that they're doing something to contribute to their own wellbeing and health (P12)

Other participants, whilst recognizing the importance ascribed to cervical screening more broadly, were less likely to view cervical cancer or screening as being of personal relevance. One participant reported familial experiences leading to anxiety regarding her own cancer risk (“Since my mother’s mother had passed away several years ago due to cancer, I realized it was possible that I could be carrying a gene for cancer as well, which is a harrowing thought” P5), but other participants perceived the likely susceptibility of young women to be very low indeed:

I do feel like older women are more likely to have cervical cancer? I might be wrong but if that is the case, cervical cancer leads me to denial…I can’t get that yet, I’m too young (P15)

When I think of cervical cancer, I think of an older generation of women getting it and I think of the fact I do not know what the symptoms are to diagnose it (P9)

Whilst participants understood the importance ascribed to screening, not all were clear on the reasons for this and what cervical screening entails:

Although it is obviously a very useful procedure in detecting abnormalities, the thought of having a test done, as someone who hasn’t had one as I’m too young, does seem a bit daunting and embarrassing too, one of the main reasons being you don’t really know what to expect until you’ve experienced it (P14)

**Screening intentions: a cost/benefit analysis of the available information**

The responses of participants were mixed when asked to state their intention regarding their first screening invitation. Responses suggested an internal cost-benefit analysis, where perceived
benefits and barriers based on the information and beliefs they held were internally weighed up, resulting in a decision about intention to screen. Overall, most participants reported they intended to attend screening when invited. In line with the assumptions of the HBM, those who did plan to attend were able to clearly articulate the reasons for cervical screening. For these participants, screening attendance was understood as an active form of self-care:

I am extremely confident that I will attend a cervical screening as I am aware of the purposes and benefits of the procedure and I understand that it is important for my physical wellbeing. Although I am aware that the procedure may be uncomfortable and unpleasant, I think that the benefits outweigh the costs, as having reassurance that I have good physical health or knowing early on that there may be a problem which is likely to be solvable will be worth the short-term discomfort (P13)

I am quite confident that I will attend screening when I turn 25 because I know that it can only be beneficial, although I know I may find it slightly embarrassing I think it's easy to remember that my health is what matters (P6)

However, for some participants, the internal weigh up between benefits and barriers led to doubts as to whether they would attend cervical screening. Barriers included self-reported low knowledge about cervical cancer and screening and anxiety about the invasive nature of the procedure. Embarrassment and vulnerability were discussed by nearly all participants, with many perceiving this as the most unpleasant aspect about the prospect of screening. The thought of genitals being exposed to a stranger, even if they have “seen it all before”, was a source of worry:

I will be reluctant to attend cervical screening. This is because I think I would find the experience uncomfortable and too invasive…This would put me off booking an appointment… I do not feel that I have [been] educated enough on the subject of both cervical screening and cervical cancer, so I do not feel as though I truly understand how important it would be to attend (P3)
There are a lot of women who I think don't attend purely for those reasons stated [feelings of embarrassment, uncomfortableness and anxiety waiting for results]. They may think that they're unlikely to get cancer and so don't see the point in being tested and risking the cons towards having it done (P1)

Those participants uncertain as to the personal relevance of screening (including feeling that screening was a required behavior but not understanding why) reported feeling more fearful about screening and this was often attributed this to the uncertainty of not knowing what to expect. All participants believed providing clear information to young women would increase the likelihood of future attendance:

The only reason why women might not attend is due to lack of information or fear.

Therefore, I can only really think of giving out more information that's readily available and debunking myths… as ways of encouraging young women to attend cervical screening (P4)

**Discussion**

The results of this study provide insight in to the knowledge and beliefs that pre-screening aged women hold regarding cervical cancer and screening. Participants had varied knowledge, and cited several sources of information available to them. In accordance with the HBM, intentions to attend were based on an internal cost-benefit analysis based on information and beliefs about cervical screening held by participants. Most expressed an intention to attend when invited, with facilitators including knowledge surrounding timely abnormality identification, and increased health awareness. However, some participants displayed doubts, with barriers including lack of screening-based knowledge, leading to anxiety about the procedure, as well as low ‘Perceived Susceptibility’ of cervical cancer. Relating to the HBM construct ‘Cues to Action’, participants stressed the importance of increasing knowledge about cervical cancer and screening to promote participation in young women. Educational settings, social media, and familial conversations, were suggested as sources of information that might be suited for tailored interventions.
To our knowledge, only one study (Sadler et al., 2013) has explored knowledge and attitudes towards cervical screening held by pre-screening aged women in the UK. The present study reinforces Sadler et al. (2013), (as well as research by Patel, Jeve, Sherman, & Moss, 2016), demonstrating many young women have low levels of knowledge surrounding cervical cancer; including development risk, preventative actions, and the screening procedure. Knowledge surrounding cervical cancer and screening is proposed to increase with education level (e.g. Low, Simon, Lyons, Romney-Alexander, & Waller, 2012). However, despite the sample of the present study having high educational attainment as undergraduate students, many reported a lack of knowledge; highlighting an unmet need for educating young women about cervical cancer and screening. This is particularly salient as knowledge regarding cervical cancer and screening is an important predictor of screening attendance (e.g. Lovell et al., 2015).

The HPV vaccination at school was highlighted by participants as a missed opportunity for education surrounding cervical cancer and screening. For example, participants in Hilton and Smith’s (2011) and the current study refer to HPV vaccination as “the cancer jab” without knowing specifically what the vaccination aims to prevent. Adolescents across Europe are known to be have rather limited understanding of the HPV vaccination and the need for cervical screening post vaccination (Patel et al., 2016; Sadler et al., 2013). School nurses have expressed the need to address misconceptions surrounding the need for cervical screening attendance regardless of vaccination (Hilton, Hunt, Bedford, & Petticrew, 2011). Familial interactions were reported as being an important source of screening knowledge with mixed consequences. Familial conversations are well documented as a source of knowledge surrounding cervical cancer and screening: Hilton and Smith (2011) found that 12-18 year old girls in the UK who knew about cervical screening, had learnt about screening from their mothers. The mixed effect that family members may have on cervical cancer-based preventative behaviors has been demonstrated. Young women in the UK, whose mothers’ do not attend screening, are less likely to be HPV vaccinated (Spencer, Brabin, Verma, & Roberts, 2013). Additionally, qualitative research with young American women showed that family members may encourage screening participation and HPV vaccination by information provision and alleviation of
fears. However, others felt family members could hinder vaccination and screening uptake: as engagement in services may act as confirmation of sexual activity (Head & Cohen, 2012; Hopfer & Clippard, 2011).

In line with previous research (e.g. Sadler et al., 2013), the present study’s findings demonstrate that many young women are anxious regarding the perceived potential for embarrassment and vulnerability during cervical screening. This anxiety led to some participants expressing an intention to not attend future screening. These anxieties may translate into actual non-attendance in young women: over a quarter of the women (aged 25-29) in a survey by Jo’s Trust (2019) reported they were too embarrassed to attend cervical screening. Participants in this study suggested social media may be an important tool to combat this anxiety by normalizing the procedure, and ‘debunking’ myths held about screening. Indeed, social media, including ‘Facebook’ and ‘Twitter’ were suggested as a suitable platform for cervical cancer prevention interventions amongst 18-19 year old American female students (Sundstrom et al., 2018).

Strengths and Limitations

Throughout this research authors engaged in reflexivity to maintain awareness of the relationships between researcher and participant, and to allow a deeper understanding of research results. We also engaged in further quality checks such as field note taking, and use of an audit trail to ensure consistency between the data and our findings. However, some quality checks such as respondent feedback were not feasible due to the participant sample being undergraduate students, and therefore not contactable upon leaving university.

Email interviews offered strengths to this research, including high levels of honesty and openness by participants. Participants frequently shared personal beliefs and emotions about cervical screening, gathering a detailed representation of barriers faced by young women. However, enhanced anonymity resulted in some participants divulging in high amounts of personal information, leading to lack of focus. Here, prompts were crucial to regain focus, as well as respectful replies, to ensure participants did not feel criticized for their openness. Email interviews resulted in participants sharing
creative ideas about how low screening attendance in young women could be addressed. This supports the utility of email interviews for exploratory work with young people.

Despite cancer and screening based knowledge being explored and probed through personalised questions and prompts, participants were not directly asked what they know about cervical cancer and screening. Additionally, only screening based intention, not future screening behaviors are reported in this study. This is an important consideration as intentions are frequently not translated to behavior (Sheeran, 2002). Relatedly, our results comprised of participants’ reflective intentions for screening attendance in the form of a cost-benefit analysis. This is interesting, as practical (or automatic) barriers have been found as predictive of screening non-attendance in younger women (Waller, Bartoszek, Marlow, & Wardle, 2009). However, the current findings of women’s intentions, as well as women’s reflective motivators are valuable, as both reflective and automatic barriers interact to influence screening attendance. For example, practical barriers may impact the translation of intention in to screening attendance (Chorley, Marlow, Forster, Haddrell, & Waller, 2017).

Conclusion

This research has explored young women’s knowledge and beliefs about cervical cancer and cervical screening before they are invited to attend and has provided insight as to what may help support screening attendance from the perspective of young women themselves. Creating tailored interventions for young women by providing accurate and realistic information about screening at appropriate times and from acceptable sources, presents an opportunity to increase future uptake of screening in young women.

Relevance to Clinical Practice

Future interventions targeted at young women may be effective when based on increasing knowledge of cervical cancer and screening. Educational interventions may overcome barriers salient to young women by eradicating uncertainty and anxiety, through the provision of accurate representations of cervical cancer and the screening procedure. To tailor interventions to young
women, the results of this study suggest young women’s current sources of information surrounding cervical cancer and screening may be utilized.

Interventions using social media may be a tool to normalize screening participation and increase young women’s knowledge surrounding cervical cancer and screening. Social media has a large reach to women aged below 25, and has demonstrable utility as a cost-effective and easily implemented method to raise knowledge and awareness of health problems (Levac & O’Sullivan, 2010). To enhance the effectiveness of social media campaigns, celebrity endorsements may further engage young women. Research has shown that a social media campaign reporting the experience of a UK celebrity with cervical cancer increased awareness, and improved attendance of cervical screening, although this increase was transient (e.g. MacArthur, Wright, Beer, & Paranjothy, 2011).

Educational interventions implemented in schools may be an effective method to enhance screening based knowledge and encourage future screening attendance. For example, Grandahl et al. (2016) demonstrated that a 30 minute educational session about HPV in secondary schools improved HPV based knowledge and vaccination rates. Despite HPV vaccination occurring in schools, there appears to be a missed opportunity to implement a ‘teachable moment’ surrounding cervical screening. Teachable moments are “naturally occurring life transitions or health events thought to motivate individuals to spontaneously adopt risk-reducing health behaviors” (McBride, Emmons, & Lipkus, 2003). A brief informative intervention during the time of HPV vaccination may increase the likelihood of future screening attendance by increasing young women’s perceived susceptibility of cervical cancer. The use of teachable moments on cervical cancer-based preventative behaviors has already been promoted: maternal cervical cancer screening has been suggested as an opportunity to disseminate information regarding HPV vaccination to increase adolescent uptake (Carlos, Dempsey, Patel, & Dalton, 2010).

Creating interventions aimed at facilitating educational conversations between family members and young women may be a further method to facilitate greater cervical cancer based knowledge in young women. As family members may have both positive and negative influences on
young women’s screening based beliefs, interventions ensuring family members hold accurate and up to date knowledge surrounding screening is critical. Maternal cancer screening visits have been proposed as method to improve their child’s preventative cancer based behaviors through a further teachable moment (Carlos et al., 2010). Parent-child communication is a predictor of cervical cancer-based preventative behavior. For example, Roberts, Gerrard, Reimer, and Gibbons (2010) demonstrated intended and actual HPV vaccination uptake in 18-25 year old American women was associated with mother-daughter communication about sex and associated health risks, and HPV vaccination. Additionally, maternal communication surrounding cervical cancer screening has been found to be positively associated with future screening attendance by American adolescents (Kahn, Huang, Ding, Geller, & Frazier, 2011). The results of this study may guide the development of nurse led interventions within educational and maternal screening contexts to increase screening attendance and first invitation.

**What does this paper contribute to the wider global clinical community?**

- Young women cited a low level of knowledge about cervical cancer and screening leading to some having doubts about screening attendance at first invitation.

- Key knowledge and beliefs underpinning these doubts included low perceived susceptibility of cervical cancer, anxiety about what the procedure will entail (due to low knowledge, and negative descriptions from others), and fear of the potentially embarrassing nature of the procedure.

- Educational interventions by nurses during maternal cervical screening appointments and HPV vaccination within schools may be opportunities for introducing a teachable moment to promote cervical screening attendance at first invitation. Social media campaigns using trusted sources may also be effective at disseminating information and normalising the screening procedure, thus promoting attendance.
References


This research was designed and completed by a young woman who was below the UK screening age, with young women also below screening age. The synchronicity in gender and age between researcher and participant allowed the researcher to relate to participants’ experiences and opinions with her own knowledge, attitudes, and opinions surrounding cervical screening. For example, prior to beginning the research project SG also felt that she did not have enough information about cervical cancer and screening, and had found social media and family members as her primary sources of initial knowledge.