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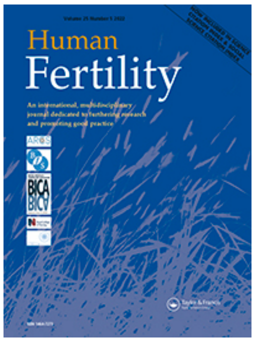

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ORIGINAL ARTICLE

Fertility preservation decisions in young women with breast cancer: a qualitative study of health care professionals' views and experiences

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ABSTRACT

Fertility preservation (FP) discussions prior to breast cancer treatment are an important aspect of care and considered routine practice. However, studies show that women diagnosed with breast cancer have unmet needs about FP discussions. To better understand them, a qualitative study was conducted to explore the perceptions of healthcare professionals (HCPs) regarding FP for young women diagnosed with breast cancer. Semi-structured interviews were performed in a University teaching hospital to explore the knowledge, attitudes and reported behaviours of HCPs (oncologists, breast surgeons, breast care specialist nurses and fertility specialists) who offer FP discussions ($n = 20$). Data were analysed thematically. HCPs in this study were aware of the need to discuss FP with patients but were not confident in their knowledge and were unsure of their role in the discussion. Patient characteristics of younger age, nulliparity and ethnicity appeared to influence if and how HCPs discussed FP, in addition to the personal attitudes and knowledge of HCPs. Specialist nurses were identified as having an important role in FP discussions. Raising awareness of the essential components of FP discussions by a checklist or algorithm may help in addressing ambiguity and promoting consistent FP discussions by HCPs.

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Fertility; preservation; discussions; women; breast cancer; Qualitative

Introduction

Breast cancer is the most common cancer in England, with 46,109 cases diagnosed in 2017 (ONS, 2016). Of those diagnosed, around 4000 patients per year are in the reproductive age group (18–45 years) and it is the most common cancer for women of this age (ONS, 2016). Chemotherapy is recommended for most women diagnosed and advances in treatment mean mortality rates are continually decreasing. The five-year age-standardized net survival rate for women aged 15–39 diagnosed with breast cancer is 85% (ONS, 2019). Consequently, attention is now focussed on the undesirable long-term consequences of treatment for young women such as ovarian impairment and infertility.

Chemotherapy-induced amenorrhoea (CIA) is a common side effect and it is not certain whether menses will resume after treatment has finished. In women who do resume menses, this may take up to three years and by this point their fertility may have declined further (Sukumvanich et al., 2010). The risk of permanent amenorrhoea after chemotherapy for breast cancer increases with age; those under 30 years having a 20% rate, increasing to >80% in women over 40 years (Reh et al., 2008). These factors make oncofertility preservation discussions important in the care of women with breast cancer.

Moreover, the average age that women decide to start a family has been steadily increasing over the last decade meaning more women may not have completed their families at the time of a breast cancer diagnosis, making fertility-related treatment effects of breast cancer a significant issue (ONS, 2015). Younger women (<51 years) are shown to have poorer quality of life, worse emotional well-being and have more trouble adjusting after a breast cancer diagnosis which can be associated with the fertility consequences of being pre-menopausal during treatment (Howard-Anderson et al., 2012).

Guidelines from both the National Institute for Health and Care Excellence (NICE) (2013) and a Joint Working Party of The Royal Colleges of Physicians, Radiologists and Obstetricians and Gynaecologists

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(2007) have recommended that all women of reproductive age who may undergo treatment that could potentially affect their fertility should be informed about possible toxic consequences on fertility and offered a referral to a fertility specialist, with an oocyte or embryo cryopreservation as appropriate. Despite this, research has shown a lack of knowledge and uniformity in how health care professionals (HCPs) manage fertility preservation (FP) discussions in young women with breast cancer and show that women have unmet needs regarding FP (Corney & Swinglehurst, 2014; Gorman et al., 2011; Kirkman et al., 2013).

Rates of the documentation of FP discussions in the medical notes of young women with breast cancer were shown to be between 26 and 55%, and only 48% of HCPs reported 'always' discussing fertility-related treatment effects with young women with breast cancer (Banerjee & Tsiapali, 2016; J. W. King et al., 2012; McCray et al., 2016). Recall of FP discussions by women showed rates between 34 and 52%, suggesting the discussion may not have happened or may not be fully registered at the time or remembered subsequently (Banerjee & Tsiapali, 2016; Duffy et al., 2005). Women have reported a desire to be more informed at diagnosis and in a timelier fashion as they felt this had restricted their choices and rushed them into making important decisions (Corney & Swinglehurst, 2014; Gorman et al., 2011; Hill et al., 2012; Kirkman et al., 2013; Lee et al., 2011; Thewes et al., 2005). Women have also reported feeling that assumptions were made about what they wanted and that their choice in a decision about FP was restricted, women with children felt particularly vulnerable to this (Corney & Swinglehurst, 2014; Kirkman et al., 2013; Lee et al., 2011).

The burden of infertility after cancer is a potentially preventative problem dependent on adequate information giving from HCPs. The developing field of oncofertility, and its role in incorporating both oncological management and fertility consequences of treatment, is an important and vital part of comprehensive multi-disciplinary management of women to ensure patient-centred care. This also helps to prevent negative psycho-social effects ensuring appropriate information provision, informed decision making and autonomy (Vu et al., 2017). The differences in women's desires and expectations regarding FP and the information they require reinforces the need for HCPs to be informed and ready to respond appropriately. This study aimed to qualitatively explore HCPs' views and opinions on FP; particularly on how they offer FP discussions based on their knowledge, opinions, attitudes and experience.

Materials and methods

In-depth individual semi-structured face-to-face interviews were conducted after approval through the Integrated Research Application System, Health Research Authority (reference number: 219082) and the Research and Innovation department of the hospital. A purposive sampling method was used to identify HCPs from one large University teaching hospital and included all specialities that were involved in the care of young women with breast cancer and able to offer FP discussions. HCPs were recruited from the oncology department (as often women are offered FP prior to commencing chemotherapy), breast care unit (where the initial diagnosis and further management plans are discussed) and the fertility centre (where detailed discussion and provision for FP takes place once the referral is made from the breast oncologists or the breast care unit). The three specialities often work together to ensure discussion and provision of FP. From each specialty, the list of all grades of medical and nursing staff was obtained and approached face-to-face and/or emailed a participant information sheet and then contacted to confirm participation and interviews arranged. The decision was taken to interview at least 20 HCPs across the specialties.

A topic guide was created prior to conducting interviews and reviewed by a consultant breast surgeon and a qualitative researcher. Open questions were formed based on what was found in the literature around the topic and new questions that required exploration. Additional questions were used as necessary for further probing. Questions mostly focussed on HCPs' understanding of FP, how they approach giving information on this, how they feel about doing it, and how they prioritize when managing young women. Examples of questions included are: 'What is your understanding of fertility preservation?', 'How do you approach giving information to patients on this topic?', 'How easy do you find discussing fertility preservation with women diagnosed with breast cancer?'.

Interviews were conducted in a private office space or the participant's own office with only the researcher and participant present. Informed consent was taken and interviews audio-recorded and later transcribed verbatim. Interviews lasted approximately 30 to 45 min. Transcripts were analysed thematically using NVivo software. An inductive approach to data analysis based on the grounded theory method was used (Braun & Clarke, 2006). This approach allowed theories and hypotheses to be constructed from the empirical data as they emerged, coded and placed into thematic categories.

Results

Semi-structured interviews were undertaken with 20 HCPs (Breast Surgeon ($n = 4$), Breast Nurse ($n = 3$), Oncology consultant ($n = 5$), Oncology trainee ($n = 3$), Fertility team ($n = 5$)). No reasons were given for non-participation by those invited, although time constraints were perceived as the main reason. The key themes and findings are described below.

Awareness, knowledge and understanding

All interviewees had a general awareness that FP for young women with breast cancer was an option, however, most lacked confidence in their knowledge of what is involved in FP and the options that exist (Table 1). Some said that they found FP discussions more difficult due to not feeling entirely confident with their knowledge. Participants stated this was an important reason why they would be prompted to refer women to a fertility specialist so that advice would be given from a specialist in that area.

> 'I think fertility preservation in a way, the evidence that we have regarding it isn't great. So, when presented with a patient in clinic with these issues, I don't feel as though I have a lot of research or evidence to fall back on when knowing what best to do.' Oncology Consultant

> 'I don't know very much about it to be perfectly honest, and that can be difficult when I talk to a lady, she asks me those questions, I can't answer her fully.' Breast Care Specialist Nurse

They acknowledged the importance of the fertility centre to help women come to a decision and the good link between their speciality and the fertility centre. There was awareness about National Health Service (NHS) funding, how to refer to the centre and they understood the referral to be simple and prompt. In contrast, participants from the fertility centre reported that referrals did not happen as often as they believed they should and were dependent on the awareness in oncologists and breast care teams for women to be referred.

> 'Although I think certainly, we need to make perhaps the breast care centre a little bit more aware of how easy it is to refer someone. Because I don't think we see all the ladies that would be able to have it done.' Fertility Doctor

The knowledge that participants had was gained through individual experience and personal interest, which was found to be different between individuals. Most HCPs agreed that they would like to know more about FP and suggested various resources that may help such as teaching every six months, information leaflets and regular feedback from the fertility centre.

There was a discrepancy, both within and between specialities, regarding whose responsibility it is to provide an FP discussion. Some argued responsibility lay with those in breast care as this is often the first point of contact after diagnosis. Others argued that, as infertility is a consequence of cytotoxic drugs, oncologists were more informed and in a better position to have this discussion. One oncologist suggested that 'as a service, we probably under-refer'.

> 'I feel that the surgeon is the one who should identify the potential candidate and speak to the patient as quickly as possible, we are the ones who break bad news, the clock starts then, this is the zero point, and we don't want to waste time'. Breast Surgeon

> 'For the oncologist, he knows what the cytotoxic drugs he is using and the radiation and so on, effects on, reproductive organs etcetera. The surgeon doesn't. So that is why it's always imperative that the

Table 1. Qualitative interview findings – Awareness, knowledge and understanding.

Key theme	Response
Mixed awareness of fertility preservation	• 'I can only give the basics obviously and I don't know the fine details of what it involves' *Breast Surgeon* • 'I'd rather say "look, this is, I believe, an option for you, I don't know a great deal about it" and I'm happy to admit ignorance, people don't expect me to know about it.' *Breast Surgeon* • 'I don't know very much about it to be perfectly honest, and that can be difficult when I talk to a lady, she asks me those questions, I can't answer her fully.' *Specialist nurse* • 'I don't feel as though I have a lot of research or evidence to fall back on.' *Oncologist*
Varied sources of information	• 'I have looked it up myself, I have been to some conferences as well for breast cancer and I have also attended courses for young patients done by the European School of Oncology and they have addressed the issue of fertility preservation many times.' *Breast Surgeon* • 'Maybe having a bit more information from the fertility department might be helpful, or reassuring information. I think a registrar came over and gave a talk a few years ago and something like that would be helpful, a bit more information really.' *Breast Surgeon*
Mixed understanding of responsibility	• 'I feel that the surgeon is the one who should identify the potential candidate and speak to the patient as quickly as possible, we are the ones who break bad news, the clock starts then.' *Breast Surgeon* • 'For the oncologist, he knows what the cytotoxic drugs he is using and the radiation effects on reproductive organs; the surgeon doesn't. So that is why it's always imperative that the oncologist has a discussion with them, he can quantify the risk of infertility.' *Oncologist*

> oncologist has a discussion with them, he can quantify to them what is the risk of infertility'. Oncology Consultant

Attitudes

There were mixed attitudes towards the importance of discussing FP (Table 2). All participants knew fertility was an important issue for women and most acknowledged infertility, and the opportunity of FP, as a vital quality of life issue for cancer survivors. Two participants considered, however, that an FP discussion is not as important as cancer and treatment itself, and becomes more of a secondary issue.

> 'As I say to my patients, I want your life to be as good as it can be for as long as it can be, and if we're going to cure you I want you to have a normal life, and clearly having children is an important part of that having a normal life'. Oncology Consultant

> 'There's lots of other stuff, and because we're a cancer service we tend to do cancer and everything else, as I loosely said, peripheral'. Breast Surgeon

> 'For me personally, I don't think the first thing they think about is fertility, they want to see what their treatment options are and how can we cure this cancer. That is probably what is running in their mind'. Oncology Trainee

Interviewees from all specialities expressed that one of their main concerns was the time that would be required for the consideration of FP intervention and the subsequent delay to cancer treatment. This influenced the importance placed on FP discussions when consulting with women. Some interviewees from the fertility centre, however, explained time delays were a small issue compared to that of risking fertility. Some also mentioned their concern about overwhelming women with FP information after the initial shock and distress of a breast cancer diagnosis. Interestingly, female participants mentioned feeling more comfortable discussing FP than the male participants. Similarly, those who were parents said they could relate to women's fertility concerns more easily.

> 'I'd probably be much more sensitive to it now that I've got kids, that probably makes a difference, in the human way that we're all kind of tempered a bit as doctors by our own lives'. Oncology Trainee

Characteristics of the woman diagnosed with cancer also influenced the participant's attitude. Over half of all participants expressed more concern for women who were nulliparous at the time of diagnosis. Some clinicians thought the prospect of infertility could also be more traumatic for younger women (in their 20s/30s) making them more inclined to discuss FP with them. The fertility centre participants believed women under 35 years were more suitable for FP as the success rate is higher. However, oncologists thought the discussion may be more appropriate for those in the latter stage (>35 years) since, being older, they were more likely to have their ovarian function affected by chemotherapy. Ethnicity had some effect on attitudes, clinicians

Table 2. Qualitative interview findings – Attitudes.

Key theme	Response
Different priority place on fertility preservation	• 'There's lots of other stuff, and because we're a cancer service we tend to do cancer and everything else, as I loosely said, peripheral.' *Breast Surgeon* • 'I think there are still a lot of people, including my colleagues maybe, that mock this opportunity for patients and they still think yes these people need cancer treatment, we can't be bothered about fertility, in the way that they might think that they're delaying their treatment or they're causing a negative effect of the cancer treatment.' *Breast Surgeon* • 'If we're going to cure you, I want you to have a normal life, and clearly having children is an important part of that having a normal life.' *Oncologist*
Time pressures	• 'I truly believe the oncological plan should go first to make sure you are going to be absolutely safe for the future … if you're going to end up compromising your own safety, you cannot really raise a baby.' *Breast Surgeon* • 'In the scheme of things, I don't think it [time delay] makes a big difference. Probably in the long term, it is better for them as well, that they should go through this so that they have the option to have a family.' *Oncologist*
The pressure of overwhelming women	• 'We don't know how much information they have taken in, loads of patients come back before they start chemotherapy and have still got so many questions.' *Oncologist* • 'There's genetics, there's surgery, there are all the potential other treatments and then the last thing that you might be thinking of is the fertility side as well.' *Oncologist*
Influence of women's characteristics	• 'I think it would be more in my mind from the outset if I knew they didn't have children and we were sending them for chemo shortly.' *Breast Surgeon* • 'The opportunity should be there, and it doesn't matter if they've got no children or whether they've got two or three children, they have to have that discussion with them and be allowed an opportunity to be referred if they wish to.' *Specialist Nurse* • 'I think it's [fertility] always on your radar with a young woman because I think it's always quite striking when you're seeing a young woman or person diagnosed with cancer.' *Oncologist* • 'I think women in their forties usually will have had the family and they may have teenagers … so probably I wouldn't always routinely bring it up so much in that age group.' *Breast Surgeon*

Table 3. Qualitative interview findings – Behaviour and role of specialist nurses.

Key theme	Response
Mixed views on what a 'discussion' is	• 'You just ask the question, do you have any plans to expand your family or … and they will lead you. If they say no then we will just get on and discuss the rest of the effects of treatment.' *Oncologist* • 'Maybe I'm being a bit of an optimist in saying that we discuss it when actually people want more of a discussion and we're just asking a couple of quick questions, maybe making a few assumptions based on that and actually women demand more.' *Oncologist*
Importance of clinical specialist nurses	• 'I'm a very difficult person to get hold of … the breast care nurses are more available'. *Breast Surgeon* • 'Because you're a nurse and it's this image they can tell a nurse something that you can't always tell a doctor … but they do tell us things that they may not feel that they can tell the doctor'. *Specialist Nurse* • 'Often the breast care nurses are quite good at reminding us if we, as the surgeons, have forgotten or it just may not be appropriate if the patient was too distressed and upset to start talking about these things at the same time'. *Breast Surgeon*

mentioned direct experience where Asian women were less likely to engage in discussion about fertility, especially with a partner or family present. Language barriers also presented difficulty when trying to get across important information on options around FP.

HCP perceptions of their behaviour

All participants said infertility should and would always be discussed with young women diagnosed with breast cancer. For oncologists, this was part of the consenting process for chemotherapy. There was a discrepancy regarding participants' role in discussing FP and what is regarded as a 'discussion' (Table 3). When asked about how they approach and give information, participants reported that if the woman stated she had completed her family or if she had clearly indicated not wanting children, they would conclude the FP discussion. Others reported further questioning about post-cancer treatment plans and reminded women that their priorities and desire for children may change in the future. Two oncologists said they feared making assumptions about what women want and were unsure of their approach and whether they should be giving more information as they did not know what women expected from them. All participants emphasized that decisions around FP are solely the woman's choice and they were only there to facilitate this. Most felt young women would have already decided about fertility before it is mentioned so sometimes assumed a lengthy discussion would not be required.

> 'Maybe I'm being a bit of an optimist in saying that we discuss it when actually people want more of a discussion and we're just asking a couple of quick questions, maybe making a few assumptions based on that and actually women demand more'. Oncology Trainee

Role of clinical specialist nurses

The breast care specialist nurses seemed particularly passionate and took the interview opportunity to emphasize the importance of FP discussions and the impact on a woman's future quality of life. It was also recognized by the other interviewees that the nurses are an integral part of the discussion (Table 3). This was due to their availability to talk to women and approach the psycho-social aspects of a cancer diagnosis. One breast surgeon mentioned they were more focussed on the diagnosis and treatment of cancer and therefore more likely to forget an FP discussion, relying on prompts from the specialist nurses.

Discussion

Fertility preservation is an important survivorship issue for young women diagnosed with breast cancer. This study found that all HCPs had awareness of, and interest in, FP options for women and were comfortable discussing it. There was, however, variability in participants' knowledge and attitudes towards this discussion.

HCPs had a general awareness of FP, however, more detailed knowledge was variable and this affected their confidence when having FP discussions with women. This reflects findings from previous UK surveys that found knowledge regarding FP options varied and could be improved (Adams et al., 2013; King et al., 2012). Interviewees in this study suggested most of their knowledge was gained from their speciality training, personal interest or experience so far, which varied depending on their career path and training level. Although it is difficult to ascertain if the variability in clinician knowledge affects women's decisions, it has been observed that women with breast cancer perceived HCP's knowledge and choices around FP to be mixed and this increased women's confusion (Lee et al., 2011). Women also report feeling frustrated by the lack of clarity and uncertainty in clinicians' responses to questions (Lee et al., 2011; Thewes et al., 2005). This suggests that women rely mostly on the information they are given by HCPs at that point in time, highlighting the importance of accurate and detailed information to facilitate informed decision-making.

Parity was shown to influence FP discussions, however, it is important that clinicians do not assume that women with children would not want FP, as it is reported in previous research that women with children had felt particularly neglected by HCPs regarding FP discussions (Lee et al., 2011). Younger age also inclined participants to discuss FP which might be because older women may have already completed their families when they are diagnosed with breast cancer. However, since conception rates are increasing in older women, HCPs must remain aware of the importance of FP in older women (>35 years) (ONS, 2015).

Some HCPs were concerned that there may be time delays when referring for FP and this may impact cancer treatment. It is encouraging that HCPs' main priority was survival and timely treatment of breast cancer, however, FP information given early on has been recognized as an important factor leading to satisfactory outcomes (M. Braun et al., 2005; Letourneau et al., 2012). Previous FP protocols have required women to be at a certain point in their menstrual cycle before initiating the process however newer random-start protocols are increasingly used which dramatically decrease the time taken to complete FP. This means time delays could become less of a concern for HCPs if the evidence base for random-start protocols was more widely known (Cakmak & Rosen, 2015; Von Wolff et al., 2016). Some studies have also shown that time delays from FP have little impact on cancer treatments, making it less of a concern (Letourneau et al., 2020).

There was disparity over what constitutes a 'discussion' and how far to probe women who are uncertain whether they want FP. Research has shown that some women felt information received was inadequate and the onus was on them to 'go and look for' fertility-related information (Thewes et al., 2005). This may mean there is miscommunication during consultations and HCPs may not be fulfilling women's expectations in delivering information, rather discussing it in detail only if they show a clear indication that they want to proceed with FP. It is important that counselling for FP for all women covers all the benefits and harm, so they do not suffer regret after cancer treatment (Letourneau et al., 2012).

There was also uncertainty over who should initiate an FP discussion, reflected in previous studies, which may mean some women may not be informed at the earliest opportunity possible (King et al., 2008; Thewes et al., 2005). Fertility effects of treatment are routinely discussed by oncologists as part of the consenting for chemotherapy however women tend to only interact with oncology further down the line when it may be too late to begin the process of FP. There may be a need to empower breast surgeons and specialist nurses to have and encourage this discussion as they see women earlier on in their diagnosis. If all HCPs are aware of the importance of this discussion, then it may happen at various stages throughout their treatment, ensuring any women that may have changed their mind, or not previously acknowledged the impact on fertility, would be picked up.

Specialist Nurses were recognised by the majority of participants as a vital part of the multi-disciplinary team managing these women and their fertility expectations. This might be because their role is to deal more with the psychological side of a woman's diagnosis rather than discussing their treatment. The Breast Care Specialist Nurses follow women throughout their cancer journey, are present in clinic appointments with Breast and Oncology consultants and also have dedicated appointments with the women themselves. Again, this highlights the need to encourage and empower all HCPs to be able to approach and carry out this discussion.

A strength of this qualitative study incorporated the views of different specialities to explore similarities and differences between and within them, acknowledging that FP discussions are part of a multidisciplinary approach and not leaving the responsibility with any one speciality. This work has correlated to a certain extent with quantitative data addressing the same topic but has enabled a deeper insight and allowed HCPs to explain why they think and act in the way they do and explore what they consider to be an FP discussion.

There are, however, limitations to a qualitative approach such as not being able to control for HCPs researching the topic beforehand, perhaps allowing them to look at guidelines had they not known before. Furthermore, there could be an element of social desirability as interviews only record subjective accounts of the way someone acts which may not represent their actual practice. There is evidence that the way a doctor communicates through their affect during a discussion with a patient can influence a patient's choices regarding management and this also cannot be determined through the interview (Croskerry et al., 2008).

There was a risk of responder bias since not all clinicians who were contacted agreed to interview. This may have been because these clinicians were less interested in the topic and involving them may have given more contrasting views. HCPs who took part were of different training levels with varying levels of expertise and this may have influenced their views on the topic, however, all HCPs interviewed are able to and in clinical settings discuss FP so this gives a broader range of views and acknowledges that women may not always see consultant specialists.

Finally, this study was conducted in one university teaching hospital and it is difficult to know whether similar findings would be gained at different hospitals within the UK. NHS trusts have different funding criteria for FP, referral pathways and accessibility which is likely to influence FP discussions.

Although the HCPs were aware of and had knowledge about FP options and referrals, there is scope for improvement. The study demonstrates that patient characteristics (age, parity, ethnicity) can have an influence on HCPs and there appears to be a disparity in the discussion of FP based on what HCPs think is necessary to discuss with individual patients. This may restrict patient autonomy for decision-making for treatment as the information they are given may differ depending on background, impacting their decisions and potentially their future fertility outcomes.

Fear of time delays for cancer treatment is a concern that may outweigh the need for an FP discussion. It cannot be underestimated that breast cancer may be a potentially very aggressive disease and the suitability of women for FP may be masked by the stage of disease, fear of cancer spreading and the urgent need to start treatment. The huge responsibility of healthcare professionals taking these factors into account whilst also needing to explain the potentially devastating side effects of treatment may present difficulty. It is clear that HCPs are survival-focussed with their main priority being a woman's cancer survival however an FP discussion cannot be disregarded due to this and women must be considered holistically, and their management plan individualized, as is required within onco-fertility management.

The psychosocial effects of infertility after breast cancer can be detrimental to a woman's quality of life and can significantly affect a woman's self-esteem, body image and femininity. It has been found that, at times, women can find the stress of potential infertility more than the stress of the cancer diagnosis itself and for some women, the concern about fertility can impact their treatment decisions (Gorman et al., 2011; Partridge et al., 2004). Without effective discussion from healthcare professionals, women risk being less informed when making decisions on treatment, exposing them to potentially life-changing consequences going forward.

Continued medical education would allow HCPs to keep up-to-date and provide standardized evidence-based care to women with confidence. Ongoing collaboration with fertility specialists and a close working relationship for oncofertility would also help foster trust between teams (Vu et al., 2017).

In conclusion, national guidelines recommend all young women in the UK diagnosed with breast cancer and undergoing chemotherapy should be offered a chance to preserve their fertility. However, there is a disparity in how this is done and healthcare professionals' (HCP) perception of their role in providing fertility preservation (FP) discussion varies. There is a need to provide adequate resources and education to HCPs for the provision of standardized care. Implementation of local protocols may help in providing FP discussion at the earliest opportunity. Further studies exploring funding opportunities across NHS Trusts and the impact on FP provision are needed.

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Author contributions

KB contributed to the conduct of the study, planning, analysis, writing the first draft of the manuscript, final approval of the manuscript and accountability for all aspects of the work. NA contributed to the concept, planning and qualitative design of the study, critically revising the manuscript, final approval of the manuscript and accountable for all aspects of the work. NP conceived the idea and designed the study, helped with analysis, writing the manuscript, final approval of the manuscript and accountable for all aspects of the work. Principal guarantor for the study.

Disclosure statement

All authors have completed the ICJME uniform declaration form at www.icmje.org/coi_disclosure.pdf and declare no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

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