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Research Report

Patient experiences of conservative treatment for early stage endometrial cancer and endometrial hyperplasia with atypia using levonorgestrel intrauterine device: A qualitative study

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ABSTRACT

Objective: The aim of the study was to obtain an in-depth understanding of the experience of women who received non-surgical treatment for endometrial adenocarcinoma (EAC) or endometrial hyperplasia with atypia (EHA). Enhanced understanding of women's experiences of non-surgical treatment is essential to inform counselling of the growing number of patients in this field.

Methods: Individual semi-structured interviews were conducted with 21 women who received conservative (non-surgical hormonal) treatment for early stage EAC or EHA using the levonorgestrel intrauterine device (LNG-IUD) as part of the feMMe trial (NCT01686126). All interviews were audiotaped and transcribed verbatim prior to content analysis.

Results: Of the 21 women interviewed, ten received conservative treatment for early stage EAC and 11 received conservative treatment for EHA. Five overarching themes were identified: i) extensive information and support needs (e.g. understanding of how the LNG-IUD treatment worked); ii) gratitude for treatment choice and non-surgical options (e.g. avoidance of potential risks associated with surgery); iii) onco-fertility (e.g. desire to maintain reproductive potential); iv) patient experience of overweight and obesity related to EAC development (e.g. history of trauma and disordered eating, multiple unsuccessful weight loss attempts); and v) patient experience of treatment options and actual non-surgical treatment (e.g. desire for early referral to counselling services).

Conclusions: This qualitative investigation enabled novel insights into the treatment preferences and decision-making process of women with newly diagnosed EHA and EAC when offered non-surgical treatment options. These insights facilitate the development of pragmatic guidance and decision support tools that could be tested in future clinical trials.

1. Introduction

Endometrial cancer is the most common gynaecological malignancy in developed countries, with a global incidence of 417,367 new cases per year (Sung et al., 2021). Obesity is the most common risk factor for the majority of endometrial cancers, as well as its precursor lesion endometrial hyperplasia with atypia (EHA) (Fader et al., 2009; Kaaks et al., 2002; Onstad et al., 2016; Papatla et al., 2016). Current standard treatment of early stage EAC is total hysterectomy and bilateral salpingo-oophorectomy, with or without surgical staging. This approach offers excellent survival outcomes, with a five-year recurrence free survival rate of >90% (Morice et al., 2016). However, standard treatment is problematic for two groups of women. These include young women who wish to maintain their reproductive potential (Alesi, 2005; Cunningham, 2014; Himmel et al., 1997), as well as women who are elderly, morbidly-obese, and those with multiple medical comorbidities

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where risk of surgery could outweigh the likely benefit (Kondalsamy-Chennakesavan et al., 2011; Kondalsamy-Chennakesavan et al., 2012). Research into conservative (non-surgical) treatments of endometrial cancer is considered a priority internationally (Creutzberg et al., 2013).

Only few clinical trials have evaluated the efficacy and oncologic safety of non-surgical treatment of EAC and EHA using levonorgestrel delivered by an intrauterine device (LNG-IUD) (Hawkes et al., 2014; Janda et al., 2021; Kim et al., 2019; Minig et al., 2011; Westin et al., 2021), reporting pathological response rates ranging from 37% to 66% (Janda et al., 2021; Kim et al., 2019; Minig et al., 2011; Westin et al., 2021). One of these was the feMMe trial, a randomised controlled Phase II clinical trial that investigated the effectiveness of LNG-IUD for the treatment of EAC or EHA, with or without metformin or weight loss (Janda et al., 2021). The feMMe trial enrolled 165 patients, 96 (58%) diagnosed with EAC and 69 (42%) diagnosed with EHA. All participants had a body mass index (BMI) > 30 kg/m^2. feMMe contributed to the clinical evidence supporting the use of LNG-IUD, reporting pathological response rates of 43% for EAC and 82% for EHA. The trial had an additional element uncommon in clinical trials – a qualitative component that explored participants' experiences of non-surgical treatment, their perceptions of its advantages and disadvantages, and the decision-making processes that underpinned their commitment to an alternative treatment option. Qualitative data that deepens our understanding of women's experiences of therapies and decision-making is essential to inform counselling of future patients in this field. In this paper, we present these qualitative data from the feMMe trial.

2. Methods

feMMe comprised an open label, three-arm randomised Phase II clinical trial (NCT01686126), which commenced enrolment in December 2012 and completed follow-up in May 2020. The feMMe trial enrolled patients with histologically confirmed, clinically stage 1 FIGO grade 1 EAC or EHA. The methods and primary outcomes of this study have been previously described (Janda et al., 2021). Qualitative interviews were conducted as part of long-term follow-up of women who participated in the feMMe trial to inform the translation of the trial interventions into clinical practice. Participants in Queensland (n = 96) were re-contacted up to seven years post-diagnosis for long-term follow-up and invited to complete a survey, and the option to be interviewed about their experience of the feMMe trial and non-surgical treatment. Fifty-one participants responded to the invitation and consented to long-term follow-up. Of these, 24 participants also consented to be contacted for an interview. One participant later became unwell and withdrew consent, one participant returned their consent form after data collection and analysis were complete, and one participant was lost to follow-up. A total of 21 participants were interviewed between October 2020 and May 2021.

2.1. Sociodemographic characteristics

Sociodemographic and clinical characteristics were collected at baseline and updated at long-term follow-up including age, relationship status, education and ethnicity, BMI, diagnosis (EAC or EHA), and time since diagnosis.

2.2. Interviews

Written consent was obtained to participate in semi-structured interviews conducted by MO and MJ at a mutually suitable time arranged via telephone. The semi-structured interview format included pre-determined questions, while also allowing investigators to ask unplanned follow-up questions based on what participants said in their response. Participants were reminded of the purpose of the study at the beginning of each interview and re-confirmed verbally that they agreed to interview recording. Of the 21 interviews, 20 were conducted via telephone and one via video call. The interviews began with a general question: 'Looking back at the time of your diagnosis, can you tell me a little about that time and how you felt?' Subsequent questions invited women to discuss their views of cancer diagnosis; treatment options and decision-making; their process for considering trial participation; the treatment itself (challenges and benefits); the treatment's practical, emotional and physical impacts; as well as their interactions with doctors and other health professionals.

Data collection continued until no novel information was provided by participants. All interviews were conducted by MJ (female health psychologist with extensive experience in qualitative data collection and analyses) and MO (female research assistant with experience in qualitative research the under the guidance of MJ). The interviewers had no part in the participants' clinical care or clinical trial experience. Only the investigator(s) and participant were present for the interview. Participants' names were replaced with code numbers to preserve anonymity. This research was approved by the Royal Brisbane and Women's Hospital Human Research Ethics Committee (REC/12/QRBW/289).

2.3. Data analysis

Interviews were audio-recorded and professionally transcribed verbatim. NVivo 12 software (QSR International) was used to manage the data. All interviews were analysed using inductive content analysis, as described by the six stages of analysis outlined by Braun and Clarke (Braun and Clarke, 2006) This method involved familiarisation through repeated reading of the transcripts to grasp whole context, followed by initial coding to identify common patterns and concepts. Two experienced qualitative analysts (MJ and MO) independently identified important and reoccurring themes, then jointly examined codes and interpreted key themes. Inductive content analysis is a widely used analytic method in qualitative research which allows for exploratory analysis and is well-suited for use where limited knowledge of the research topic exists (Kyngäs, 2020). Researchers sometimes come to qualitative data analysis with pre-conceived ideas, which could influence their interpretation of the data. To mitigate this, researchers held regular discussions to manage pre-assumptions and reach mutual interpretation of the data. The full set of themes were reviewed by checking them against the data to ensure no important ideas were missing. Finally, the research team deliberated to define and name the finalised themes.

3. Results

3.1. Participant characteristics

The median age of participants was 65 years (range 32–79 years). The median interview length was 30 min (range 20–61 min). At the time of interview, seven participants had undergone a hysterectomy after participation in the feMMe trial. The median duration of follow-up from enrolment in the feMMe trial to time of interview was three years (range one to seven years). The participant characteristics are described in Table 1. Of the 21 women interviewed, 17 joined the feMMe trial because they had major co-morbidities that increased their risk of surgical adverse events, and four joined to maintain their reproductive potential. Participants came from all three randomised treatment groups including LNG-IUD (n = 8), LNG-IUD plus metformin (n = 10), and LNG-IUD plus weight loss (n = 3); ten participants had EAC and 11 participants had EHA. We identified five core themes from the data, which are described in Table 2 with illustrative quotes.

4. Overall experience

Eighteen of 21 participants expressed they were very satisfied with their decision to participate in the feMMe trial, stating they would repeat the experience again or recommend non-surgical treatment to another

Table 1
Patient characteristics.

Patient characteristics	n = 21 (%)
Age at time of interview (median, range)	65 (32-79)
Relationship status	
Living with partner	13 (62)
Living without partner	8 (38)
Highest education level	
University degree/diploma	4 (19)
Trade or technical certificate	7 (33)
Secondary school	10 (48)
Ethnicity	
European	17 (81)
Other*	3 (14)
NR	1 (5)
Joined for	
Morbidity	17 (81)
Fertility	4 (19)
Treatment arm	
LNG-IUD only	8 (38)
LNG-IUD + metformin	10 (48)
LNG-IUD + weight loss	3 (14)
Clinical characteristics	
BMI	
30.0 – 39.9	4 (19)
40.0 – 49.9	6 (29)
≥ 50.0	11 (52)
Diagnosis at baseline	
EHA	11 (52)
EAC	10 (48)
Years passed since diagnosis and trial enrolment at interview†	
≥ 1	4 (19)
≥ 2–4	12 (57)
≥ 5	5 (24)
Previous history of cancer	
Yes	1 (5)
No	20 (95)
Family history of cancer	
Yes	15 (71)
No	2 (10)
Unknown	3 (14)
NR	1 (5)

Abbreviations: NR, not reported; LNG-IUD, levonorgestrel intrauterine device; BMI, body mass index; EHA, endometrial hyperplasia with atypia; EAC, endometrial adenocarcinoma.

* Other: Pacific Islander (n = 1); Asian (n = 1); British/Indigenous Australian (n = 1).

† All 21 participants were diagnosed and enrolled in the feMMe trial within the same month.

woman faced with the same decision. At the time of interview, six of the 18 patients who remained satisfied with their decision to participate had undergone a hysterectomy, four of whom had experienced disease progression.

5. Theme 1: Extensive information and support needs

The first theme, extensive information and support needs, highlighted how participants made their decision to join the clinical trial and how they needed additional support throughout conservative treatment. Four subthemes were identified: i) Trust in clinician, ii) role of verbal communication in decision-making, iii) health literacy, and iv) peer support.

5.1. Trust in clinician

A trusting relationship with the clinical team, specifically the treating surgeon and trial nurse, was frequently mentioned as an important influence in women's decision to join the clinical trial. Despite women feeling anxious or overwhelmed at first, they described a willingness to join the trial based on their confidence in the clinical team. Throughout the trial, women described having a continued trusting and positive relationship with the clinical team as a motivating factor to stay in the trial, with frequent personal contact providing a sense of being looked after.

5.2. Role of verbal communication in decision making

Seven women described being unsure or confused about the treatment options at first, but clearer on their decision after discussion with the clinical team who provided clarifying explanations, creating understanding and trust. The majority of women described joining the trial as a clear decision, expressing it as either the best option, or that they had no other option. For these women, the decision to participate was strengthened by their knowledge of the risks of surgery. *"So it was like a no-brainer for me to accept the feMMe trial and actually do that, because surgery wasn't really a great option for me" (Participant #11)*. Four women with severe comorbidities who were unsuitable candidates for surgery said they would have preferred a hysterectomy if it had been offered to them as a treatment option. "*I would have preferred to have the surgery" (Participant #15)*.

5.3. Health literacy

Understanding of personal risk factors, how EAC and EHA develops, the seriousness of their diagnosis, and how the LNG-IUD treatment works varied between the women interviewed. Participants recommended tailoring the level of information provided to women upon diagnosis, depending on their preference. For example, women expressed they would have liked more information specifically on the clinical aspects of the how the treatment works to abate cancer, in terminology they could understand. One woman who had a genetic form of EAC would have liked more information on the hereditary aspects of her condition and how she might need to prepare her daughter for the same experience.

5.4. Peer support

When asked what additional support they would have liked, women mentioned a peer support group would have been helpful to connect with women who had experienced, or were experiencing, the same cancer and treatment. *"There was very few young people and I suppose for me at the time it would have been nice to speak to someone who actually had been through the same." (Participant #7)*. Two women described finding their own sources of peer support online, one by joining a forum through the Cancer Council and another using a coaching tool provided by a weight loss app.

6. Theme 2: Grateful for treatment choice and options beyond surgery

This theme illustrated women's sentiments of gratitude or feeling "lucky" to be offered participation in a clinical trial, or for the option to continue their family planning. Women with co-morbidities identified they had "limited options" and were grateful to avoid potential risks associated with surgical treatment, or to try a conservative option before undergoing immediate surgery. Participants were motivated to join the trial to help other women maintain childbearing capacity, or by the desire to contribute medical research. Altruism was mentioned as a motivating factor where the aims of the trial were aligned with patients' personal values and goals (e.g. allowing oneself or other women to maintain childbearing capacity, avoid hysterectomy). One patient felt she was not counselled well, stating she had wanted a hysterectomy and felt she was an unsuitable candidate for conservative treatment. This patient did not mention altruistic motives. "*I had my tubes tied when I was 30, I'd been through menopause and no bloody way was I having anymore*

Table 2
Themes and illustrative quotations from participants.

Theme and subthemes	Illustrative quotes
Extensive information and support needs	
Trust in clinician	*My doctor suggested that I have it, which I've got utmost faith in him; he suggested I have it and so did the doctors in at the hospital. (Participant #14)*
	I was a bit anxious, but they know what they're doing, so I just go along with what they want. (Participant #15)
	Like I mean if a specialist and nurses that are trained in that sort of thing, you know, if they're confident I mean I think you can give it a try. (Participant #11)
	Just the people, as I said, I just felt enveloped in safety. It's the only way I can explain it to you. Everyone was just amazing. (Participant #18)
	[Trial Nurse] was my - she was my shining light. If it hadn't have been for [Trial Nurse], I don't think I would have been so committed. As much as I wanted it gone, I wanted it to be done, she was the one that explained all the nitty gritty. I wanted to know. (Participant #5)
Role of verbal communication in decision making	*I didn't quite understand it, but I went along. I thought 'oh well, if it helps that's good'. I felt okay. It didn't worry me. A little confused at first, but as it went on I sort of understood it a lot more, after talking to the doctor. (Participant #2)*
	It was generally clear. They gave me a rundown of what it was about and why it was relevant to me. So I was like, "Okay, that's cool. Let's do this." And the whole process was fine. Everything was explained to me as it was going on. So I got to know a little bit more about it as I went along. So yeah, it just seemed to be pretty clear cut to me. (Participant #6)
	I was just a bit not sure at first, because it was talking about taking some drugs, and I was a bit unsure what the drugs are going to be or anything. But then when I found out more about it, I was like oh yeah. Once I got more information, I was like oh yeah, that is fine, I'm happy to do that. (Participant #20)
	Really, just discuss it over and talk it well and truly through with the professor and his team. The lass that we had assigned to us was an utter delight, and she was terrific and we had no problems. [Trial nurse], that's right, she was fabulous. (Participant #19)
Health literacy	*Like, "This means this." [Trial nurse] said it all in clinical terms, and I kind of got it, and I appreciate her so much, but it would have been nice to – she still talked in clinical terms. So, instead of saying, "Well, this is – it will absorb it, or it will go here or –". Why did I stop bleeding? I stopped bleeding; okay, why did I stop bleeding? (Participant #5).*
	But yeah, they said that I was one of only five or six to have the same condition at the same age. So I was like, "Oh," which made me a little bit concerned because I'm like, "Well, I just had a daughter. Does this get passed onto her?" (Participant #6)
	Yeah, it's like the more you understand, the more you – and even, you know, the diagrams we use when we teach biology, I think some of that background I think – and maybe they do do it, is ask your client, your patient, what they know about things. How much they know and how much they'd like to know about what's going to happen. (Participant #1)
	There's fat people in this world and they get operated on. I felt why have I got to be so different? (Participant #10)
Peer support	*Well, it would have been good to talk to somebody who did have it. Like, have the same as I did. I just thought, well, out there where I was there was nobody around that had it. (Participant #3)*
	I prefer to be in an open one-on-one situation. I got a lot more benefit out of being in that group situation and being with people that have the same problems. (Participant #7)
	Just having a place that you could talk to someone who had either been through treatment or could tell you what to expect or - just having a group or a forum or some sort of thing that you could go to would have been helpful. (Participant #13)
Grateful for treatment choice and options beyond surgery	
Gratitude	*I was grateful that there was a treatment option, because I was only told that there was - back in the day, there would have only been one option, which was a hysterectomy. So I was grateful that there was another option available that didn't involve hysterectomy because, at the time, we were doing IVF to get pregnant. That's how they actually found the growth. So to be able to find out that I could actually possibly still go ahead and have children, I was quite grateful for that. (Participant #13)*
	I was very lucky to get on, I feel, still even now. (Participant #10)
	I spoke to – at the time it was [Retracted] and he explained to me the two options which was removal of my uterus or basically this participation in this trial so he explained it to me quite clearly and it was 100% what I wanted to do, it was exactly what I had wanted even prior to this knowledge, was I definitely wanted to keep my uterus so I was very positive about the trial and very happy actually that this was available to me. (Participant #7)
Altruism	*I was quite happy to go into the trial if it was going to also help other women, or other people with the same thing. So that's really why I entered the trial in the first place, was it could help people, and help myself at the same time. (Participant #19)*
	I guess when I found out the trial was more about helping older ladies and younger ladies not have to have hysterectomies before they have their kids, or when they're too old to have the op, and that they could prolong their life. That made it really worthwhile, being on it, to be honest. That sort of information, it felt that I was helping other people as well as myself, I suppose. (Participant #10)
	Interviewer: And what were your main motivations for wanting to join the trial? *Interviewee: I've got three granddaughters. That's enough. (Participant #12)*

(*continued on next page*)

Table 2 (*continued*)

Theme and subthemes	Illustrative quotes
	You learn from me so you can help other people and helps me as well. (Participant #10)
Onco-Fertility	
Maintain childbearing capacity	*Saying yes to the trial was pretty much because I wanted children, I wanted to be cured so I could have children. (Participant #4)*
	But yeah, I knew that I would still be able to have kids if I wanted to, so it was that I decided to do that before the final step. Because, when you get a hysterectomy, it's like oh well, that's that. (Participant #20)
	So I wanted to make sure that before the option of getting a hysterectomy was a thing I had to actually consider, I wanted to make sure I had actually done everything that I could do so that when it came to that point, I was like, "Okay, I don't have to feel bad because I did try." (Participant #6)
Time running out for fertility	*I was just grateful that it only went for six months and that we could get back on track to the IVF. (Participant #13)*
	So really, it was a lot of – time was the biggest factor in my decision-making as well. (Participant #6)
Concern regarding management of hormones	*I think if [hysterectomy] was something they offered me as a solution straight up, I would have been terrified because I was 25. So it was disheartening and then it was terrifying because there's a whole – well, that means that my body can't do whatever I want it to do now and that no one can help me with it. But also, I was concerned about, "Well, does that mean that I lose all my hormones? Do I have to go onto a hormonal treatment then for the rest of my life? What does that mean going forward?" There was a lot of things that really would have been on my mind or just to keep my health in check. (Participant #6)*
Patient experience of overweight or obesity related to EAC development	
Personal history and emotional impact of overweight and obesity	*Well apart from being overweight, but I've been overweight ever since I was conceived. (Participant #17)*
	My whole life has revolved around exercising, eating, dieting, my whole life, it's been every moment of every day has been about that and then it causing anxiety and then developing the overeating issue too which I developed because I just – well what's the point? What's the point of doing anything because nothing works? (Participant #7)
Trauma	*Yeah, I have a dysfunctional family like most people. My mother's very controlling and I felt I couldn't breathe around her. And she would be a walking – I felt like she was a walking argument. Everything had to be done her way or you copped it, and I felt like I lost myself and now I find my elder sister's just exactly the same way.* (Participant #21)
	It was the stigma of it, and it was counting calories. I counted calories as a kid; I've always been big. And for me, my mother was a big, "You're fat; you're ugly; you're never going to achieve anything." So, it was a thing in my head that – that's all my life. (Participant #5)
Innumerable unsuccessful attempts to lose weight	*Look, I've been to Weightwatchers, I've been to community health groups, I've been to this, I've been to that, I've been to – yeah. I'm hopeless. That's all it is. I'm just plain hopeless. (Participant #12)*
	I was having a lot of trouble – with my diabetes, I was eating really well, but my weight was coming off that slowly I was nearly going nuts. (Participant #21)
	I think talking to someone about nutrition and why your body doesn't lose weight; why it holds weight. Even now, that absolutely gobsmacks me, because I can eat very little – actually I don't eat a great deal – and I don't lose weight. (Participant #5)
Patient experience of treatment options and actual non-surgical treatment	
Practical and logistical issues	*The cost from where I lived to the airport was $70 each way. So that – nobody pays for that except my pension. And then the taxi fare from the airport to the hospital and back again, I've got to pay for that. That's another $50 each way. (Participant #17)*
	Because I live so far away from the hospital there, to come down there, well, it's not a huge trip, it's only an hour or so. But still, when you're in pain, and you're in a different headspace, it's a big deal to get to there and back again. (Participant #9)
	Well, my biggest problem was the distance. Like we're two and a half hours away. (Participant #12)
Mental health	*Yeah but, yeah it was, yeah just you need – [counselling] needs to be put into place really, that would be my one big suggestion, would be to – it'd save a lot of heartache… I had a sister die from ovarian cancer, and here you tell me I've got blooming cancer too and where else am I going to go? Straight down that black hole, isn't it? (Participant #17).*
	I guess I'm someone who suffers from depression and anxiety, so the whole diagnosis thing was a little bit stressful and depressing at the time, I think. Because I was going through IVF and all the hormonal stuff, and what it meant to me, then it was - I got pretty depressed at the time. So I guess if there was counselling offered, it would be good. But I found that myself anyway. But other people might find that beneficial too. (Participant #13)
	As I said if I'd have had that right at the very beginning I wouldn't have probably had so much mental issues as what I had…Yeah I just wished that they, the counsellor could have been there for me at the beginning yeah. (Participant #10)
	A counsellor. A counsellor would have been good. (Participant #5)

frigging ankle biters. I was totally unsuitable, I was not in the right age bracket" (Participant #17).

7. Theme 3: Onco-Fertility

The third theme, onco-fertility, related mainly to premenopausal women who joined the feMMe trial for fertility preservation although other women also commented on this topic. Three subthemes were identified: i) maintain childbearing capacity, ii) time running out for fertility, and iii) concern regarding management of hormones.

7.1. Maintain childbearing capacity

For young women wishing to maintain childbearing capacity, having the option to have a child on their own was their primary motivation for joining the trial. "*I wanted to keep my uterus, because I still wanted another child, so having the surgery was definitely not what I wanted, and it was something that I was 100% against." (Participant #7).* Women were concerned they would develop feelings of regret if they did not try the feMMe trial, and expressed the desire to exhaust all options before undergoing hysterectomy.

7.2. Time running out for fertility

Participants who joined feMMe to maintain childbearing capacity made references to the pressures of time when discussing family planning. For example, one woman stated "I don't have time on my side" and wanted to try and conceive "as soon as possible", while another expressed relief the feMMe trial required treatment for just six months so she could continue family planning. "*I was just grateful that it only went for six months and that we could get back on track to the IVF." (Participant #13)*

7.3. Concern regarding management of hormones

In addition to the desire to retain her uterus for future childbearing, one young woman described concern regarding management of hormones if she were to have a hysterectomy, and identified this as a concern of surgical treatment. "*But also, I was concerned about, "Well, does that mean that I lose all my hormones? Do I have to go onto a hormonal treatment then for the rest of my life? What does that mean going forward?" There was a lot of things that really would have been on my mind or just to keep my health in check." (Participant #6)*

8. Theme 4: Patient experience of overweight and obesity related to EAC development

A fourth theme was women's experience of overweight and obesity, and how this related to the development of EAC or EHA. Three subthemes were identified: i) Personal history and emotional impact of overweight and obesity, ii) trauma, and iii) innumerable unsuccessful attempts at weight loss.

8.1. Personal history and emotional impact of overweight and obesity

All participants interviewed were classified as obese, with a BMI $>$ 30 kg/m^2 at the time of their enrolment in the feMMe trial. In the interviews, five women described they only became aware overweight or obesity was a risk factor for the development of EAC or EHA when informed by their treating clinician at the time of diagnosis. Some women described being overweight or obese from childhood, while others described an increase in weight gain after giving birth or a traumatic event (e.g. immobility following a car crash). Women described the emotional impact being overweight or obese had on them (e.g. stigma, anxiety, low self-esteem), particularly for those who had been overweight from a young age. "*If I would have had to say the hardest thing I've ever had to go through in my life is always being morbidly overweight…" (Participant #7).*

8.2. Trauma

Some participants who had been overweight or obese since childhood shared their history of emotional or disordered eating. (There was no evidence in the interviews that the trauma of the cancer diagnosis precipitated, or perpetuated disordered eating). These women made a connection between overeating and coping with traumatic events experienced as a child or adult. For example, one patient described patterns of comfort or emotional eating, while another described a history of bulimia and strained relationship with her mother. "*And food was my hug. Food was when I was in tears, I'd be eating food, whether I was hungry or not. And even if I wasn't hungry, I'd force myself to eat it because that's the only thing that gave me any comfort whatsoever" (Participant #21).*

8.3. Innumerable unsuccessful attempts at weight loss

Women expressed frustration and struggle, explaining that they had tried everything to lose weight, particularly for those of whom overweight had been a life-long issue. Participants described their repeated unsuccessful attempts at weight loss, and how despite changed behaviours, such as healthy eating, they did not lose any weight. "*I've always been a big person, like right from a child… I still watch what I eat, but I just don't lose any more weight. So I think it's just the way I am" (Participant #11).* Women attempted to lose weight both before and after their diagnosis of EAC or EHA, including throughout their experience of non-surgical treatment.

9. Theme 5: Patient experience of treatment options and non-surgical treatment

Experiences of the LNG-IUD treatment varied between women. Some praised it and reported no side effects, while others felt it exacerbated pre-existing symptoms of depression and anxiety. Women's experiences of biopsies to check the response to the hormonal therapy ranged from moderately uncomfortable to highly painful. In coping with the pain of biopsies, women described the need to steel themselves in preparation for the initial biopsies, but felt they built tolerance over time. One participant stated she would have preferred to be advised to bring a support person, particularly for her first biopsy. Overall, the importance of continued support was frequently mentioned, including social support (family and friends), peer support (desire for connection with other women who had a similar experience), as well as professional support (counselling).

9.1. Practical and logistical issues

Barriers to non-surgical treatment related to the logistical aspects of treatment access, including long-distance travel for those living regionally or remotely, associated travel costs (e.g. fuel, parking, taxi), and the time required for appointments. Despite these barriers to access, the three-monthly biopsies were unanimously reported as an appropriate time frame, and patients would not have wanted appointments to be any more spaced out as regular check-ups provided peace of mind and reassurance that any signs of progression of disease would be detected early.

9.2. Mental health

Mental health was identified as a subtheme in the patient experience of non-surgical treatment. Women described experiences of struggling with their mental health throughout the feMMe trial, and identified how early referral to counselling or integration of counselling into the

information provision sessions would have been beneficial. Reasons for challenges in mental health throughout the trial included struggles with fertility; family history and previous loss of a loved one from a gynaecological cancer (worsening fear of progression in a patient's own diagnosis); and feeling unsupported by the medical team, their immediate family or friends.

10. Discussion

This study explored how women made the decision to participate in the feMMe trial, the experience of being offered conservative treatment for early stage EAC, and the patient experience of the actual non-surgical treatment. Themes of extensive information and support needs; gratitude for treatment choice and options beyond surgery; onco-fertility; family and personal history of overweight and obesity; the emotional impact of overweight; and patient experience of treatment options and actual non-surgical treatment were identified. We specifically wanted to know what women thought about the choice of non-surgical treatment, and if surveillance of the cancer under hormonal treatment was something they were concerned about. Surprisingly, the idea of the cancer being left 'in-place' rather than eradicated by surgery was not as much of a concern for women as we had expected, with women viewing the LNG-IUD as simply another type of cancer treatment. Cancer treatments whereby the tumour is monitored and treated while being left in place are increasingly common, reducing the need for surgery, and offering less invasive treatment options. Examples include active surveillance of low-grade prostate cancer (Azzouzi et al., 2017; Carlsson et al., 2020) and neoadjuvant chemotherapy followed by non-operative management of rectal cancer (Strode et al., 2019; Akce and El-Rayes, 2019). Research to date on the use of the LNG-IUD for non-surgical treatment of early stage EAC has primarily focused on clinical outcomes, and little evidence articulating the patient perspective in this field (Kim et al., 2019; Minig et al., 2011; Westin et al., 2021). As conservative treatment options for early stage EAC continue to emerge, this lack of knowledge about women's experiences of, and preferences for, conservative treatment means that clinicians might not provide critical information needed by women for informed, evidence-based decision-making.

Previous research has investigated how to best guide people faced with difficult healthcare decisions, where more than one option exists and outcomes are valued differently (Stacey et al., 2020; Hoefel et al., 2020). The Ottawa Decision Support Framework (ODSF) is an example of a theoretical model developed to guide practitioners in assessing patients decision needs, providing decision support, and evaluating how this support affects decisional outcomes (Stacey et al., 2020). It is underpinned by multiple theories and constructs including prospect theory, reasoned action, decision analysis, self-efficacy and social support (Ottawa Hospital Research Institute, 2021). The ODSF posits that addressing the decisional needs of patients through decision support interventions improves decisional outcomes (Ottawa Hospital Research Institute, 2021). A number of the decision support interventions outlined in the ODSF align with findings reported from participants in the present study. These include the importance of establishing trust and rapport between the patient and the medical team, assessing the patient's knowledge and information needs, and mobilising access to resources such as emotional support, support groups (Stacey et al., 2020).

Similar to previous studies (Clark et al., 2016; Haggerty et al., 2017; Soliman et al., 2008); many participants were unaware that being overweight or obese increased their risk of developing endometrial cancer. While many participants were unaware of the connection between overweight and obesity and the development of EAC or EHA, they were acutely aware of the connection between their eating patterns and emotional state. The consumption of highly palatable and energy dense foods for stress-related relief and temporary alleviation of uncomfortable psychological and emotional states is well documented (Dallman, 2010; Hemmingsson, 2018; Tryon et al., 2013). Hedonic binge eating provides immediate emotional reward, and creates habits through changes in the hippocampus and amygdala, and disruptions to energy homeostasis, resulting in weight gain, overweight and obesity (Hemmingsson, 2018). In the interviews, it was unexpected to have women report on traumatic experiences (e.g. abuse from parents, partners and sexual abuse), suggesting that trauma might contribute to women's struggle with overweight or obesity. This was only able to be found through the addition of the weight loss intervention as part of the feMMe trial. The interviewers did not pre-plan to speak to women about trauma and obesity – this reoccurring subtheme occurred unprompted through speaking to women about the inclusion of the weight loss intervention. Experiences of trauma, lifelong struggle with body image, and obesity or weight issues can compound over a person's lifetime (Portelli Tremont et al., 2021). The role of trauma-informed care which recognises the adverse impact trauma can have on an individual's health is increasingly being recognised as important to optimise patient care (Portelli Tremont et al., 2021).

Counselling on the psychological and emotional aspects of weight gain falls beyond the scope of clinical counselling for decision making. However, given the findings of this study – and that obesity is a major risk factor for endometrial cancer – it is important clinicians are aware of these sensitivities when establishing trust and rapport, and understand there might be underlying reasons why women struggle with their weight. Participants recommended that early referral to counselling services when discussing treatment options is important. Counselling therapies which integrate topics women might choose to discuss, such as acceptance and commitment therapy, could be well placed to benefit (Harris, 2006; Zhao et al., 2021). The option of a peer support group suggested by women could also be beneficial (Mirrielees et al., 2017; Park et al., 2019), however further research would be needed to ensure the program met the specific needs of women undergoing conservative treatment of endometrial cancer (Mirrielees et al., 2017; Park et al., 2019; Hoey et al., 2008; Hu et al., 2019).

Table 3
Key themes and suggestions for future research.

Key themes	Proposed next steps in research
Extensive information and support needs	*Development of patient focused information resources for women considering or receiving non-surgical treatment of early stage EAC/EHA using the LNG-IUD.*
Grateful for treatment choice and options beyond surgery	*Continue research and translation of conservative treatment options into standard clinical practice.*
Onco-Fertility	*Further exploration of the specific informational needs of women considering or receiving non-surgical treatment of EAC/EHA using the LNG-IUD to maintain childbearing capacity.*
Patient experience of overweight or obesity related to EAC development	*Explore how women could be offered a more personalised and tailored approach when being counselled about treatment options, with due consideration of their physical and emotional challenges.*
Patient experience of treatment options and actual non-surgical treatment	*Explore health-related quality of life outcomes for women who receive non-surgical treatment of early stage EAC/EHA using the LNG-IUD.* *Investigate the feasibility and effectiveness of additional psychosocial support during conservative treatment, including early referral to counselling services.*

Abbreviations: EAC, endometrial adenocarcinoma; EHA, endometrial hyperplasia with atypia; LNG-IUD, levonorgestrel intrauterine device.

11. Strengths and limitations

The feMMe trial was unique in its randomised design and inclusion of a weight loss intervention. This allowed interviewers to discuss a wide range of topics and to obtain novel insights into the experience of women offered conservative EAC treatment. The results of this study might not be generalisable for all women considering non-surgical

treatment as the interviews only included patients who had accepted participation in the trial and were willing to speak about their experience. Additionally, participants were limited to women with a BMI > 30 kg/m^2, based on the inclusion and exclusion criteria applied to feMMe. When interpreting the findings of this study, it is important to acknowledge the four women who participated in the study to maintain childbearing capacity had an equally viable option of surgical verse non-surgical treatment, while non-surgical treatment was the more realistic treatment option for the patients with major comorbidities. The use of a validated questionnaire regarding participant satisfaction with their decision to opt for conservative treatment could have strengthened this study. Finally, participants were interviewed one to seven years after initial diagnosis and based on the time elapsed there is an increased chance of recall bias due to the risk of forgetfulness or altered perception of treatment experience (Burks et al., 2020).

11.1. Implications for practice and future research

Three major practice points can be obtained from this study. Firstly, the majority of women were grateful for the option of non-surgical treatment. This demonstrates support from patients for continued research and translation of conservative treatment options into clinical practice (Table 3). Secondly, women recommended a personalised and tailored approach when counselling them about their treatment options, with due consideration of their physical and emotional challenges. Third, many women with endometrial cancer felt they could benefit from additional psychosocial support, including the option of early referral to counselling services or peer support groups alongside somatic treatment. The feasibility and effectiveness of such support during conservative treatment of EAC or EHA remains to be studied. Overall, the findings of this study address the gap in knowledge about women's experience of conservative EAC treatment, and highlight the need for further research projects designed specifically to address patients' unmet information and support needs prior to widespread implementation of this novel treatment.

12. Conclusion

This qualitative investigation allowed novel insights into the treatment preferences and decision-making process of women with newly diagnosed EHA and EAC when being offered non-surgical treatment options, as well as the patient experience of non-surgical treatment. Findings from this study can contribute to the development of practical guidance to assist clinicians with decision support, which could be taken forward in future clinical trials or translation into clinical practice.

CRediT authorship contribution statement

Montana O'Hara: Methodology, Investigation, Data curation, Formal analysis, Project administration, Visualization, Writing – original draft, Writing – review & editing. **Monika Janda:** Conceptualization, Supervision, Investigation, Writing – review & editing. **Alexandra L. McCarthy:** Supervision, Writing – review & editing. **James Nicklin:** Resources, Writing – review & editing. **Graeme Walker:** Resources, Writing – review & editing. **Andreas Obermair:** Conceptualization, Supervision, Funding acquisition, Writing – review & editing.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: AO reports consultancy fees from Baxter Healthcare Australia and New Zealand and Astra Zeneca Australia, not directly related to the subject of this manuscript. In addition, AO has a trademark licensed to Surgical-Performance Pty Ltd. All other authors declare they have nothing to disclose.

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