

## An Investigation into Fertility Awareness and Attitudes amongst Midwives and Nurses

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### Abbreviations

Assisted Reproductive Technologies (ART)

Clinical Research Ethics Committee (CREC)

Anti-Müllerian Hormone (AMH)

Follicle Stimulating Hormone (FSH)

Antral Follicle Count (AFC)

### Abstract

#### *Aims*

Midwives and general practice nurses play a crucial role in providing support for people with infertility. This study explored their knowledge of, and attitudes towards, fertility investigation and treatment, referral pathways, and newly introduced public funding for assisted reproductive technology (ART) in Ireland.

#### *Methods*

A cross-sectional online survey was distributed to midwives working in Irish maternity hospitals and general practice nurses between February and April 2024. The survey explored attitudes towards and knowledge of ART. Free-text questions were analysed qualitatively using content analysis and quantitative data was descriptively analysed.

#### *Results*

86 respondents completed the survey, of which 64 were midwives (74%) and 22 were nurses (26%). Most felt they could benefit from more education regarding fertility and diminished ovarian reserve (88%). Qualitative analysis revealed that current access to public fertility care is perceived to be too restricted with criteria creating unequal barriers to access and heteronormativity assumptions negatively influencing fertility in non-normative couples.

### Discussion

This study is the first of its kind, exploring the knowledge, attitudes, and approaches to clinical practice within fertility amongst midwives and nurses working in Ireland. We demonstrate a lack of knowledge regarding subfertility amongst midwives and nurses and a desire for more education.

### Introduction

Infertility and need for Assisted Reproductive Technologies (ART) are increasing worldwide with the prevalence of infertility estimated at 15%.<sup>1</sup> Until recently, ART in Ireland was provided exclusively in the private sector. Patients requiring *in vitro* fertilisation (IVF), or other ART, had to self-fund or obtain funding from charitable organisations. Many also travelled abroad to access ART at lower cost. *In vitro* fertilisation in Ireland costs between €4,000 and €6,400 or more per cycle, which is prohibitively expensive for many individuals.<sup>2</sup> In 2021, the European Parliamentary Forum for Sexual and Reproductive rights reported that Ireland was one of only four European countries with no public ART funding and categorised Irish ART access as poor.<sup>3</sup> From September 2023, the Irish government launched public funding for couples who meet specific criteria for ART. This positive change led the European Atlas of Fertility Treatment to now classify Ireland as having moderate access.<sup>4</sup>

The Irish National Clinical Practice Guideline on Fertility Investigations and Management in Secondary Care states that '*patients seeking a fertility consultation should be seen in a primary care setting first*'.<sup>5</sup> Thus, general practitioners (GPs) and practice nurses are likely to be the first health care professionals (HCPs) people encounter when experiencing infertility. People with infertility are then referred to one of six regional fertility hubs for further investigations and management. These hubs are located within existing maternity care units and individuals referred will meet midwives and nurses of varying experience levels throughout their care. Midwives also play a crucial role in supporting individuals throughout pregnancies resulting from ART, as well as providing compassionate care to those who experience pregnancy loss. This means that what midwifery and nursing HCPs know about fertility management can have considerable impact on a person's journey through infertility.

Fertility and reproductive health awareness is generally poor and many over-estimate their reproductive potential.<sup>6,7,8,9</sup> A trend towards delaying childbearing and a later age of first pregnancy have been observed in Ireland and internationally. The Irish Central Statistics Office revealed that between 1973 and 2022, the average age of first-time mothers rose to 31.5 years in 2022 from 25 years in 1973.<sup>10</sup> Fertility awareness amongst healthcare professions is variable.<sup>11,12,13</sup> Reasons for this include limited opportunities for exposure to

fertility care in Ireland, given it was entirely privatised until recently. A recent Irish study of GP trainees showed just over half of trainees completed a four month rotation in obstetrics and gynaecology, usually with minimal fertility experience.<sup>14</sup> In addition, the study highlighted that fertility knowledge amongst obstetrics and gynaecology specialist trainees was limited, with trainees reporting a marked decrease in a woman's ability to conceive between 40 and 44 years when in reality this occurs earlier.<sup>14</sup> A UK-based study comparing fertility knowledge between HCPs and lay people found that HCPs did not demonstrate greater fertility knowledge. Despite this, they were cited as 'the most trusted source' when seeking fertility information.<sup>13,15</sup> In addition, being in a role that involves advising patients on this subject did not appear to improve their understanding. It is vital to note that 83% of nurses examined by the above study worked in the capacity of advising patients regarding fertility rather than across general nursing.<sup>13,15</sup>

Given the introduction of a new public fertility service in Ireland, it was timely to assess current fertility and access criteria knowledge, attitudes and awareness amongst midwives and nurses in Ireland. Understanding midwives' and nurses' knowledge and attitudes toward fertility investigation and treatment has become crucial for advancing patient care and staff development as ART is evolving rapidly. We aimed to explore the following amongst midwives and GP practice nurses working in Ireland:

- 1) Knowledge of and attitudes towards fertility investigation and treatment
- 2) Knowledge and attitudes towards referral pathways for patients with infertility
- 3) Opinions of current access criteria for public funding for ART

## Methods

A survey questionnaire was formulated to assess important themes amongst midwives and nurses including experience and interest in women's health and fertility, knowledge of ovarian reserve and individual confidence levels interpreting ovarian reserve tests, awareness of referral pathways for infertility, current criteria for access to state funded ART and opinions on equality of current access criteria for publicly funded ART.

The survey consisted of 30 questions developed by the authors for a similar study investigating GP knowledge of the same topic.<sup>16</sup> The initial seven questions established respondents' broad demographic information through closed questions on age, gender, number of years of experience and location of training. The next four questions explored obstetrics and gynaecology and fertility experience, which was followed by 15 questions on knowledge of fertility investigations, management, and referral pathways. The final section sought respondent opinions on the publicly funded ART access criteria and included several

open-ended, free text questions. Respondents were asked their opinions on the fairness of current criteria and if they had any additional comments on the education of midwives and nurses on fertility.

This was a cross-sectional study of midwives and GP nurses working in Ireland. The National Maternity Hospital Clinical Research Ethics Committee approved the study (EC33.2023). Participants were any midwife or nurse currently working in an Irish maternity unit and GP practice nurses. They were invited to complete the online questionnaire between February and April 2024. The invitation was disseminated by the Directors of Midwifery and Nursing in the 19 maternity units in Ireland and the Irish General Practice Nurses Association. Physical posters with a QR code linking the survey questionnaire were disseminated around the National Maternity Hospital.

All data collected was compiled into a Microsoft Excel spreadsheet for basic demographic statistical analysis. GraphPad Prism was used to explore descriptive statistics and frequencies of responses. Categorical variables were analyzed by Fishers exact test, a p-value <0.05 was considered significant. Content analysis was used to analyse the free-text responses and respondent attributes such as age group, work area and experience were associated with the data analysed. The content analysis followed three main steps. The data was carefully examined to gain an overall understanding and develop initial impressions. The second step was developing the initial codes and the final step was examining the codes to identify and generate themes related to the research questions.

## Results

There were 88 respondents. Two individuals were removed from the analysis as they were currently not practicing as midwives or GP nurses, which gives a final total of 86 responses for analysis. There are 79,489 midwives and nurses currently practicing in Ireland<sup>17</sup> however it is impossible to determine how many of these are currently working as practice nurses or midwives. It should be caveated that not all practicing individuals were eligible for this study and so it is challenging to accurately assess the response rate.

### *Demographics*

All respondents were female (n=86) with all age groups represented from 20 to over 50 years; 30-35 years was the most common age range at 23% (n=20). Most respondents worked as midwives (n=64, 74%) and 26% as nurses (n=22). More than 30% of respondents had over 20 years' experience (n=27) and 19% less than five years (n=16). Most respondents qualified in Ireland (86%, n=74).

Fifty-eight percent (n=50) reported a particular interest in family planning, with 40% of those

interested (n=20) commenting on further training in women's health including family planning courses, cervical screening, and sexuality studies. Seventy-seven percent of those surveyed (n=66) had no further subfertility training and those who reported having further training (23%, n=20) attended webinars or conferences on fertility, rather than formal training. See Table 1 for additional detail.

*Table 1. Respondent demographics*

Characteristic	Midwives (n=64)	Practice Nurses (n=22)	p-value
Age (years)			
20-29	16 (25%)	3 (14%)	0.20
30-39	23 (36%)	8 (36%)	
40-49	15 (23%)	3 (14%)	
≥50	10 (16%)	8 (36%)	
Professional experience			
<5 years	15 (23%)	1 (5%)	0.16
5-10 years	18 (28%)	6 (27%)	
11-20 years	14 (22%)	5 (23%)	
>20 years	17 (27%)	10 (45%)	
Country of qualification			
Ireland	57 (89%)	17 (77%)	0.28
Other EU	1 (1%)	-	
UK	3 (5%)	5 (23%)	
Other	3 (5%)	-	
Interest in family planning	35 (55%)	15 (68%)	0.32
Further subfertility training	13 (20%)	7 (33%)	0.38

Table 2. Attitudes to discussing fertility, knowledge of testing and public ART scheme criteria evaluation within midwives and practice nurses

	Midwives (n=64)	Practice Nurses (n=22)	p-value
<b>Fertility discussions</b>			
Yes, GPs should initiate discussions regarding their childbearing intentions	54 (84%)	17 (80%)	0.518
Yes, GPs should initiate discussions regarding fertility decline	54 (84%)	18 (81%)	0.747
Yes, obstetricians and gynaecologists should initiate conversations about childbearing intentions	61 (96%)	20 (90%)	0.598
Yes, obstetricians and gynaecologists should initiate conversations about fertility decline	60 (93%)	20 (90%)	0.643
Yes, midwives and nurses should initiate discussion about childbearing intentions	48 (75%)	15 (68%)	0.581
Yes, midwives and nurses should initiate discussion about fertility decline	42 (65%)	16 (72%)	0.607
<b>Fertility testing</b>			
Not knowledgeable about ovarian testing	45 (70%)	9 (41%)	<b>0.020</b>
No confidence in interpreting AMH results	52 (81%)	12 (54%)	<b>0.022</b>
No confidence in interpreting FSH results	56 (87%)	10 (45%)	<b>0.002</b>
Unsure of AMH testing cost	43 (67%)	5 (23%)	<b>0.000</b>
Feel could benefit from further education	56 (87%)	20 (91%)	1.000
<b>Suitability to perform AMH testing</b>			
Patient not TTC, 'fertility check' desired	34 (54%)	8 (36%)	0.219
Family history early menopause or POI	54 (87%)	16 (73%)	0.339
Previous pelvic surgery	24 (39%)	8 (36%)	1.000
Previous chemotherapy	46 (74%)	12 (54%)	0.109
TTC <1 year	10 (16%)	7 (32%)	0.124
TTC >1 year	56 (90%)	16 (73%)	0.176
<b>Referral criteria, perceived fairness</b>			
No previous sterilization procedures	26 (41%)	8 (36%)	0.803
≥1 partner with no living children	16 (25%)	5 (23%)	1.000
Female BMI 18.5-30	41 (64%)	13 (59%)	0.799
Male aged 18-60 years	28 (44%)	11 (50%)	0.629

Female aged 18-41 years	53 (83%)	20 (91%)	0.500
Relationship >1 year	35 (55%)	13 (59%)	0.806
ROI resident	58 (91%)	21 (95%)	0.672

POI=premature ovarian insufficiency, ROI = Republic of Ireland, TTC = trying to conceive

Regarding suitability to perform testing of Anti-Müllerian Hormone (AMH) levels, eighty-three percent (n=70) felt those with a family history of early menopause or premature ovarian insufficiency should be tested. Eighty-five percent (n=72) felt it was suitable to test AMH in individuals trying to conceive for over a year. Fifty-percent (n=42) thought it was reasonable in those for a 'fertility check' but not actively trying to conceive. There were no statistical differences between midwives and nurses regarding suitability for testing. These results are further broken down by role in Table 2.

### *Referral criteria*

Seventy-seven percent (n=67) were not aware of the referral pathway for subfertility.

Fifty-one percent (n=44) were not aware of the referral criteria for publicly funded IVF pre survey completion.

Eighty-eight percent (n=76) believe midwives and nurses could benefit from more education regarding fertility and diminished ovarian reserve.

There were statistically significant differences between midwives and nurses regarding their knowledge of various types of fertility testing, with midwives overall reporting less confidence in and knowledge of ovarian reserve testing and test result interpretation. These are depicted in Table 2.

### *Content analysis*

Forty-one respondents provided free text responses. Two themes were generated: (1) the public funding scheme criteria creates unequal barriers to access, and (2) heteronormativity assumptions negatively influence fertility in non-normative couples. Respondents identified different aspects of each criterion that would mean some people would lose access based on a number or category that was perceived to be relatively arbitrary. The responses demonstrated insight into the real experiences of people who might be on a trajectory of health improvement but fail to make the criteria by a small degree and this would lead to their exclusion.

The criterion that attracted the most comments was BMI. Nine respondents commented on its restrictive nature and the impact this will have on people experiencing infertility.

*'I think there should be some flexibility in the top end of the BMI restriction, not up to say BMI 40 but BMI of say 32-34 if patient actively losing weight to meet criteria and especially if approaching age restriction.'* (Midwife with 5-10 years' experience, an interest in fertility, further training in early pregnancy ultrasound, aware of new criteria).

Age was another criterion that was commented on, with three respondents reflecting on the earlier age for females potentially being less fair.

*'I think the age should be put up for women to 45.'* (Midwife with 5-10 years' experience, interest in family planning, unaware of new criteria)

Relationship status was seen as a restriction with six of those surveyed commenting on various aspects including heterosexual versus homosexual couples and single women accessing care as well as relationship timelines.

*'Broader than heterosexual couples. Lots of women are single and or not in a position to start a family but wish to engage in family planning services.'* (Midwife with 5-10 years' experience, interest in fertility, aware of new criteria)

Are there any other criteria you think should be included in public funding for fertility treatment?'. Thirteen of these responses related to same-sex couples and single women looking to pursue pregnancy.

*'LGBTI+ couples being denied access sends a clear message as to who Ireland believes is entitled to be parents.'* (Midwife with 11 -20 years' experience, interest in fertility, higher degree in Sexuality Studies).

## Discussion

This study provides the first assessment of fertility knowledge and attitudes among Irish midwives and nurses during a pivotal time of healthcare reform. The findings reveal significant gaps in knowledge, variable confidence in counselling, and important perspectives on access criteria. We demonstrate a lack of fertility investigation and treatment knowledge. Most of those surveyed have no specific training in subfertility. Those who had completed further training in fertility reported attending webinars or conferences. These findings highlight a lack of formal training in fertility amongst midwives and nurses. There is a distinct need for more education regarding fertility and 88% of respondents believed they would benefit from this.

A lack of knowledge surrounding fertility testing was found with sixty three percent of respondents having no confidence in their ability to interpret ovarian reserve testing. In addition, over 80% of respondents reported little to no confidence in interpreting AMH and Follicle Stimulating Hormone (FSH) testing. There were significant differences between midwives and nurses regarding this, with more midwives expressing lack of confidence than

nurses, likely highlighting both gaps in their knowledge and their clinical work. These findings are not isolated to midwives and nurses, with Obstetrics & Gynaecology and GP trainees reporting mixed levels of knowledge regarding fertility decline.<sup>14</sup> Healthcare workers have been cited as the most utilized and reliable source of information regarding infertility, however Grace et al. found these professionals, including nurses and doctors, did not showcase better knowledge than the lay population.<sup>13,15</sup> It is vital to note that 83% of those nurses examined work in the capacity of advising patients regarding fertility rather than across general nursing. An Australian study revealed over half of GP nurses surveyed were incorrect in their assessment of when fertility declines.<sup>18</sup>

Confidence in discussing child-bearing intentions and fertility decline is important. There is limited work conducted regarding fertility knowledge specifically among nurses and none regarding midwives. Deficits in knowledge and training may lead to less willingness to discuss fertility.<sup>19,20,21</sup> A study regarding nurses and their perceptions of discussing fertility with young cancer patients revealed 'perceived lack of knowledge' of fertility options and procedures was a major issue. This lack of knowledge impacted their likelihood of discussing fertility with patients.<sup>21</sup>

Fifty one percent were not knowledgeable of the access criteria for recently introduced public fertility funding. When further explored, and the criteria detailed in the survey, the perceived restrictive nature emerged as the main concern. This is in line with findings of another cross-sectional study of GPs in Ireland showing GPs also feel that current criteria for public funding are too restrictive, particularly excluding couples with secondary subfertility.<sup>16</sup> Qualitative analysis revealed two significant themes: inequitable barriers to access and heteronormative assumptions in referral criteria. These findings align with Huddleston et al.'s work highlighting how LGBTQ+ communities face both reduced access and hesitancy in seeking fertility care due to systemic barriers and fear of discrimination.<sup>22</sup> The concerns raised about BMI restrictions and age limits reflect similar findings in Petch et al.'s study<sup>16</sup> suggesting these issues resonate across HCPs.

A gender bias was observed, with all respondents identifying as female. This can be attributed to a variety of factors, including that midwifery and nursing are female-dominated professions. In Ireland, 90% of nurses are female which indicates our survey sample is representative of the workforce.<sup>17</sup> This gender bias is consistent with other studies, with one showing 90% of obstetrics and gynaecology trainees were female.<sup>14</sup> This was a voluntary online survey and 58% of respondents indicated a specific interest in family planning and fertility. A similar bias was observed in a comparable study involving Irish trainee GPs, where over 62% reported a specific interest in women's health.<sup>14</sup> This potential bias precludes comparison with non-responders, however our findings do align with previous research,

suggesting a degree of consistency.<sup>7,10</sup> The study also had a low response rate, though it was not possible to calculate this rate accurately. Multiple recruitment strategies were employed including the use of physical posters with easily accessible QR codes. The response rates of comparable studies also vary; Yu et al., surveyed 5% of all US Obstetrics and Gynaecology trainees while a similar survey had a 22% response rate in Irish trainees. Petch et al.'s survey of registered GPs in Ireland had a 4% response rate.<sup>16</sup> Despite low response rates, surveys of HCPs can provide valuable insights into the knowledge and attitudes of practitioners.

Our findings highlight gaps in knowledge and provide areas to target in research, education and formal fertility training for midwives and nurses. There is scope for development of formal fertility training for midwives and nurses, as well as role-specific education targeting identified knowledge gaps. It also adds to the findings of other studies of trainee doctors<sup>14</sup> and qualified GPs.<sup>16</sup> The first step is to repeat this study 12 months on from the introduction of the publicly funded fertility service with the hope being that knowledge of testing and referral pathways will have improved amongst this cohort.

This research is the first to survey the knowledge, attitudes, and approaches to clinical practice within fertility and ART amongst midwives and nurses working in Ireland. There is a lack of knowledge regarding subfertility as well as a need and desire for further education. Those involved in reproductive health and maternity care have a duty to counsel and refer on appropriately. Improving confidence, knowledge and awareness of fertility investigations and ART amongst Irish healthcare workers should have a positive impact on the care patients receive.

**Declarations of Conflicts of Interest:**

None declared.

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