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Research Article

Evaluation of the Management of Premature Ovarian Insufficiency in Nigerian Women by Healthcare Professionals

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Abstract:

Background: Premature ovarian insufficiency (POI) is a significant cause of infertility and long-term health complications in women. Its management in low-resource settings is often constrained by limited awareness, diagnostic capacity, and access to appropriate interventions. This study evaluated the management of POI in Nigerian women by healthcare professionals, focusing on knowledge, clinical practices, attitudes, and institutional challenges.

Materials and Methods: A descriptive cross-sectional study was conducted at the Abia State University Teaching Hospital, Aba, Nigeria, involving 150 healthcare professionals selected through stratified random sampling. Data were collected using a validated, structured questionnaire and analyzed with SPSS version 26. Descriptive statistics summarized sociodemographic data, while Chi-square and logistic regression identified factors associated with good management practices, with statistical significance set at $p < 0.05$.

Results: Participants had a mean age of 38.7 ± 8.4 years, and 58.67% were female. Overall, 64% demonstrated good knowledge of POI, particularly regarding its definition (74.67%) and hormone replacement therapy (78%). Common management practices included hormonal assays (67.33%) and prescribing HRT (75.33%), while fertility preservation counseling was less frequent (57.33%). Positive attitudes towards POI management were prevalent, though only 38% agreed that institutional resources were adequate. Major challenges included lack of protocols (65.33%), poor patient awareness (68.67%), and limited diagnostic facilities (56%). Knowledge significantly correlated with practice ($r = 0.614$, $p < 0.001$), and good practice was associated with being a doctor, having ≥10 years' experience, and higher knowledge scores ($p < 0.05$).

Conclusion: While healthcare professionals demonstrated moderate-to-good knowledge and generally positive attitudes toward POI management, gaps remain in fertility preservation, institutional support, and diagnostic capacity. Strengthening training, protocols, and resource allocation is essential to improve outcomes for Nigerian women with POI.

Keywords: premature ovarian insufficiency; hormone replacement therapy; fertility preservation; reproductive endocrinology; healthcare professionals; nigeria; clinical management

Introduction

Premature ovarian insufficiency (POI) is a clinical syndrome defined by loss of ovarian follicular activity before the age of 40 years, producing hypergonadotropic hypogonadism with estrogen deficiency and variable menstrual irregularity or amenorrhea [1]. Although historically described as "premature ovarian failure," the preferred term "insufficiency" better reflects the sometimes intermittent and potentially recoverable ovarian function in a minority of affected women. Estimates of global prevalence have varied by method and population: earlier estimates suggested about 1% of women, while more recent meta-analyses and population studies indicate prevalence may be higher in some regions and socioeconomic strata, with pooled estimates rising into the low single-digit percentages and evidence of greater burden in low- and middle-income settings. The clinical picture of POI ranges from isolated menstrual disturbances to profound impacts on fertility and systemic health, making the condition both a reproductive and long-term medical concern for women of reproductive age [2].

The etiology of POI is heterogeneous and includes genetic causes (such as X-chromosome abnormalities and FMR1 premutation carriage), autoimmune disorders, iatrogenic injury from gonadotoxic therapies or pelvic surgery, infectious and environmental contributors, and a substantial proportion of idiopathic cases for which no clear cause is identified [1]. This

multiplicity of possible causes requires clinicians to adopt a broad, systematic approach to evaluation (medical and family history, biochemical confirmation, targeted genetic and autoimmune testing where indicated) because identifying the cause can alter counseling, screening for comorbidities, family planning, and cascade testing of relatives. The diversity of etiologies also contributes to variable clinical trajectories and complicates the development of high-certainty evidence for specific management pathways, a theme emphasized in recent international guideline efforts [3].

Beyond its immediate reproductive consequences, POI confers important long-term health risks related to premature hypoestrogenism. Women with POI are at increased risk of decreased bone mineral density and early osteoporosis, adverse cardiometabolic changes, possible cognitive effects, sexual dysfunction, and psychosocial morbidity including anxiety, depression and impaired quality of life [1]. Because many of these sequelae accrue over years and because POI affects women decades earlier than natural menopause, international recommendations consistently emphasize active long-term monitoring and preventive care (notably bone and cardiometabolic risk screening) in addition to symptomatic management. These chronic health risks also mean that treatment decisions for POI differ in important ways from menopausal care in older women [4].

Therapeutically, the foundation of medical management for most women with POI is physiologic sex-steroid replacement to ameliorate symptom burden and to mitigate long-term consequences of estrogen deficiency. Contemporary evidence-based guidelines from reproductive and endocrine societies recommend hormone replacement (estrogen with appropriate progestogen when the uterus is present) until at least the usual age of natural menopause, unless contraindications exist, and they address nuances such as routes and formulations, the need for individualized counseling, monitoring, and bone health strategies. Fertility preservation and assisted reproduction require distinct approaches, for example, referral for fertility counseling early after diagnosis, discussion of donor-egg options and the limits of spontaneous pregnancy, and require coordination between endocrinologists, gynecologists, and fertility specialists. Importantly, guideline panels also highlight gaps in evidence and the frequent under-utilization or misapplication of hormone therapy in younger women because of misplaced extrapolation from risks observed in older menopausal populations [1,3].

Optimal management of POI depends heavily on the knowledge, attitudes, diagnostic vigilance, and counseling skills of frontline healthcare professionals, including general practitioners, family physicians, obstetrician–gynecologists, endocrinologists, and allied reproductive health staff. International audits and surveys point to heterogeneity in provider awareness, variations in practice (for example, inconsistent use of recommended biochemical and genetic tests, under-prescription of appropriate hormonal replacement, and variable referral patterns for fertility care or psychosocial support), and persistent educational gaps even among specialists. In many settings these clinician-level factors, awareness of condition, comfort with long-term hormone treatment for younger women, and access to referral pathways, are the rate-limiting step to delivering evidence-based POI care [3].

In Nigeria, context-specific factors complicate the translation of international recommendations into routine care. Cultural meanings attached to fertility, variable access to specialist reproductive services, constrained laboratory and imaging resources, and fragmented referral systems can delay diagnosis and limit therapeutic options [1]. There is limited published empirical literature from Nigeria specifically examining the management pathways, clinical decision-making, or guideline adherence for POI; more broadly, studies of menopausal and reproductive health experiences in Nigerian communities highlight how sociocultural norms, local health system capabilities, and provider knowledge shape care-seeking and quality of management for ovarian and menopausal disorders. These structural and sociocultural realities, together with the burden of iatrogenic causes (for example, from cancer therapies where survivorship is improving) and infectious contributors in the region, argue for an empirical assessment of how healthcare professionals in Nigeria recognize, evaluate, counsel and treat women with POI [5].

The clinical importance of early estrogen deprivation, the complexity of etiologies, recent international guideline recommendations, and documented variability in clinician knowledge and practice create a compelling rationale for focused investigation. An evaluative study in Nigeria that documents current diagnostic practices, treatment choices (particularly hormone replacement usage), referral and follow-up patterns, and clinicians' educational needs would address a clear evidence gap. Such research can identify barriers to guideline-concordant care, uncover context-specific obstacles (diagnostic, logistic, cultural), and inform targeted interventions, provider education, local clinical pathways, or system-level resource allocation, to improve outcomes for Nigerian women affected by POI. This study therefore has the potential to generate actionable insight for clinicians, policy makers, and patient advocates seeking to align practice with contemporary evidence while respecting local realities.

Materials And Methods

Study Design

A descriptive cross-sectional study was conducted to evaluate the management of premature ovarian insufficiency (POI) in Nigerian women by healthcare professionals. The design was chosen to provide a snapshot of prevailing diagnostic and therapeutic practices, as well as to assess knowledge, attitudes, and challenges faced by healthcare professionals in managing POI.

Study Setting

The study was carried out at the Abia State University Teaching Hospital (ABSUTH), Aba, Abia State, Nigeria. ABSUTH is a tertiary healthcare facility that serves as a referral center for both public and private hospitals in Abia State and neighboring states. The hospital provides specialized obstetrics and gynecology services, including reproductive endocrinology and infertility care, and is staffed by consultants, resident doctors, nurses, and allied health professionals involved in women's reproductive health.

Study Population

The study population comprised healthcare professionals directly or indirectly involved in the management of women's reproductive health at ABSUTH. This included: Consultant obstetricians and gynecologists, Resident doctors in obstetrics and gynecology, Family physicians, Endocrinologists, Reproductive health nurses and midwives, Clinical laboratory scientists working in hormonal assay units

Inclusion Criteria:

- Healthcare professionals currently employed at ABSUTH with at least 6 months of work experience in the hospital.
- Those involved in clinical decision-making, diagnosis, counseling, or treatment of women with reproductive health disorders, including POI.
- Willingness to participate and provide informed consent.

Exclusion Criteria:

Administrative staff with no clinical duties.

Healthcare professionals on leave or unavailable during the study period.

Sample Size Determination

The sample size was calculated based on Cochran's formula for cross-sectional studies, following the methodology described by Akwuruoha et al. [6]:

$$n = \frac{Z^2(Pq)}{e^2}$$

The formula components are defined as follows:

- n represents the minimum required sample size.
- Z is set at 1.96, corresponding to a 95% confidence level.
- P denotes estimated proportion of healthcare professionals with adequate knowledge and appropriate management of POI (assumed at 50% due to lack of prior data in the setting, to maximize sample size).
- e signifies the allowable margin of error, fixed at 5% (0.05).
- q = 1 - p

Substituting values:

P = 50% = 0.5

q = 1 – 0.5

= 0.5

n = ((1.96)^2 (0.5 x 0.5))/〖(0.05)〗^2 = 384

Since the total number of eligible healthcare professionals in ABSUTH was less than 10,000, the finite population correction formula was applied:

$$nf = \frac{n}{1+\frac{n-1}{N}}$$

Where N is the total population of eligible healthcare professionals in the hospital (estimated at 210).

$$nf = \frac{384}{1+\frac{383}{210}} = 136$$

Allowing for a 10% non-response rate, the final sample size was 150 participants.

Sampling Technique

A stratified random sampling technique was employed to ensure proportional representation of different categories of healthcare professionals. The strata were based on professional roles (consultants, residents, nurses/midwives, laboratory scientists). Within each stratum, simple random sampling was used to select participants using the hospital's duty roster as a sampling frame.

Data Collection Instrument

Data were collected using a structured, self-administered questionnaire developed by the researchers after an extensive literature review and consultation with experts in gynecology and reproductive endocrinology. The instrument was divided into five sections:

1.Socio-demographic characteristics (age, sex, professional cadre, years of experience).

2. Knowledge of POI (definition, etiology, diagnostic criteria, laboratory investigations, and complications).

3. Clinical management practices (hormone replacement therapy, counseling, fertility preservation options, referral patterns).

4. Attitudes towards POI management (perceived importance, willingness to manage, perceived patient barriers).

5. Challenges in management (institutional, patient-related, and resource-related constraints).

Responses were measured using a mix of closed-ended questions, multiple-choice items, and Likert-scale questions (5-point scale ranging from "strongly agree" to "strongly disagree").

Validity and Reliability of Instrument

The questionnaire was subjected to face and content validity checks by three reproductive health experts and one epidemiologist. A pilot study involving 15 healthcare professionals at another hospital in Abia State (not included in the final study) was conducted to assess clarity, relevance, and comprehensiveness. Reliability was evaluated using Cronbach's alpha, yielding a coefficient of 0.84, indicating good internal consistency.

Data Collection Procedure

After obtaining institutional ethical approval, data collection was carried out over a 6-week period. The research team approached eligible participants in their respective departments during work hours, explained the study's objectives, obtained written informed consent, and administered the questionnaire. Completed questionnaires were retrieved immediately or within a maximum of 48 hours to minimize data loss.

Data Management and Analysis

Completed questionnaires were checked for completeness, coded, and entered into the Statistical Package for the Social Sciences (SPSS) version 26 for analysis. Data analysis included:

Descriptive statistics: (frequencies, percentages, means, and standard deviations) for socio-demographic variables, knowledge scores, and practice patterns.

Inferential statistics: Chi-square test was used to determine associations between categorical variables (e.g., knowledge level vs. professional cadre). Logistic regression analysis was performed to identify predictors of good POI management practices. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Written informed consent was obtained from all participants before data collection. Confidentiality was ensured by anonymizing the questionnaires, and data were stored in password-protected files accessible only to the research team. Participants were informed of their right to withdraw from the study at any time without penalty.

Results

The study involved 150 healthcare professionals, most of whom were aged 30–39 years (32.00%) and female (58.67%) (Table 1). Consultants and resident doctors in obstetrics and gynecology formed the largest professional group (44, 29.33%), while 30.67% had 6–10 years of professional experience.

Knowledge of premature ovarian insufficiency (POI) was generally high, with 74.67% correctly defining the condition and 78.00% identifying hormone replacement therapy (HRT) as the mainstay treatment. Overall, 64.00% had good knowledge, while 10.00% demonstrated poor knowledge (Table 2).

In terms of clinical practice, 75.33% routinely prescribed HRT, 67.33% requested hormonal assays, and 57.33% provided fertility preservation counseling (Table 3). Attitudes were largely positive, with over 88% agreeing that POI management is important for women's reproductive health, although perceptions of institutional resource adequacy were lower (mean = 2.96 ± 1.24) (Table 4).

Commonly reported challenges included poor patient awareness (68.67%), lack of institutional protocols (65.33%), and high investigation costs (61.33%) (Table 5). The mean age of participants was 38.7 ± 8.4 years, with a mean knowledge score of 68.9 ± 14.5% and practice score of 63.7 ± 15.2% (Table 6).

Correlation analysis showed significant positive relationships between knowledge and practice scores ($r = 0.614$, $p < 0.001$), knowledge and years of experience ($r = 0.342$, $p < 0.001$), and practice and years of experience ($r = 0.297$, $p = 0.002$) (Table 7). Good practice was significantly associated with professional cadre, higher knowledge level, and ≥10 years of experience ($p < 0.05$) (Table 8).

Variable	Frequency (n = 150)	Percentage (%)
Age group (years)		
20–29	31	20.67
30–39	48	32.00
40–49	46	30.67
≥50	25	16.67
Sex		
Male	62	41.33
Female	88	58.67
Professional cadre		
Consultant obstetrician/gynecologist	22	14.67
Resident doctor (O&G)	44	29.33
Family physician	18	12.00
Endocrinologist	10	6.67
Reproductive health nurse/midwife	40	26.67
Laboratory scientist	16	10.67
Years of professional experience		
1–5	35	23.33
6–10	46	30.67
11–15	38	25.33
>15	31	20.67

Table 1: Socio-demographic characteristics of participants (n = 150)

Variable	Frequency (n)	Percentage (%)
Correctly defined POI	112	74.67
Identified autoimmune causes	89	59.33
Identified genetic causes	94	62.67
Knew diagnostic criteria (FSH, estradiol)	103	68.67
Identified HRT as mainstay treatment	117	78.00
Knew associated complications (osteoporosis, infertility, cardiovascular risk)	108	72.00
Overall knowledge level		
Good (≥70%)	96	64.00
Fair (50–69%)	39	26.00
Poor (<50%)	15	10.00

Table 2: Knowledge of premature ovarian insufficiency (POI) among participants

Practice item	Frequency (n)	Percentage (%)
Routinely requests hormonal assay	101	67.33
Prescribes hormone replacement therapy	113	75.33
Provides fertility preservation counseling	86	57.33
Refers to reproductive endocrinology specialist	92	61.33
Advises bone mineral density screening	79	52.67
Uses multidisciplinary management	72	48.00

Table 3: Clinical management practices for POI

Statement	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)	Mean ± SD
POI management is important for women's reproductive health	81 (54.00)	52 (34.67)	9 (6.00)	5 (3.33)	3 (2.00)	4.35 ± 0.83
HRT should be offered to most POI patients without contraindications	74 (49.33)	56 (37.33)	11 (7.33)	6 (4.00)	3 (2.00)	4.28 ± 0.87

Fertility preservation is essential in newly diagnosed POI	69 (46.00)	55 (36.67)	13 (8.67)	8 (5.33)	5 (3.33)	4.17 ± 0.97
Institutional resources for POI management are adequate	22 (14.67)	35 (23.33)	31 (20.67)	39 (26.00)	23 (15.33)	2.96 ± 1.24

Table 4: Attitudes towards POI management (n = 150)

Challenge type	Frequency (n)	Percentage (%)
Lack of institutional protocol	98	65.33
Limited diagnostic facilities	84	56.00
High cost of investigations	92	61.33
Poor patient awareness	103	68.67
Unavailability of fertility preservation services	77	51.33

Table 5: Challenges in management of POI

Variable	Mean ± SD
Age of participants (years)	38.7 ± 8.4
Years in practice	10.2 ± 6.1
Knowledge score (%)	68.9 ± 14.5
Practice score (%)	63.7 ± 15.2

Table 7: Correlation Analysis Between Knowledge, Practice, and Years of Experience

Variable	Good practice n (%)	Poor practice n (%)	χ^2	df	p-value
Professional cadre					
Consultant/Resident doctors	54 (77.14)	16 (22.86)	10.27	2	0.006
Nurses/Midwives	21 (52.50)	19 (47.50)			
Lab scientists/others	8 (33.33)	16 (66.67)			
Knowledge level					
Good	73 (76.04)	23 (23.96)	15.86	1	<0.001
Fair/Poor	10 (26.32)	28 (73.68)			
Years of experience					
≥10 years	46 (76.67)	14 (23.33)	7.92	1	0.005
<10 years	37 (52.86)	33 (47.14)			

Table 8: Factors Associated with good Practice in POI Management

Discussion

The present study, surveying 150 healthcare professionals in Nigeria, ranging from consultants to laboratory scientists, reveals a generally favorable level of knowledge, with 64% demonstrating a "good" overall knowledge of premature ovarian insufficiency (POI), and 74.7% correctly defining the condition. This is comparable to findings in Brazil, where just over half of gynecologists accurately diagnosed POI and around half requested karyotype analysis, though only a minority identified all etiologies [7]. Our results thus underscore a relatively strong knowledge base amongst Nigerian professionals, though significant gaps remain, particularly in identifying etiologic factors (59–63%).

In terms of clinical practice, 67% routinely requested hormonal assays, and 75% prescribed hormone replacement therapy (HRT), indicating alignment with international standards. According to guidelines by ESHRE, ASRM, and Mayo Clinic, diagnosis should be based on elevated FSH (>25–40 IU/L) on two separate occasions alongside estradiol levels, and management should include estrogen and progesterone therapy until the age of natural menopause (approximately 50 years) [8]. That three-quarters of Nigerian clinicians adhere to HRT is encouraging, though specialists in Brazil reported only a 20% prescription rate despite understanding the long-term benefits [7]. The 57% rate of fertility preservation counseling in our survey is particularly noteworthy, given the ESHRE emphasis on early fertility discussions and multidisciplinary management [3].

Yet, our data also reveal concerning deficits: only around half advised bone mineral density screening or used multidisciplinary models. This is important because POI is associated with increased risks of osteoporosis and cardiovascular diseases, highlighted in ESHRE and ACOG guidelines, and multi-specialist involvement (endocrinology, genetics, psychology) is essential for holistic care [9]. In contrast, a 2025 UK Biobank/NHANES study found that menopausal hormone therapy significantly mitigated accelerated biological aging in women with POI [10], confirming the importance of such comprehensive management strategies.

Our participants' attitudes were largely positive: mean agreement scores of over 4.2 out of 5 affirm the perceived importance of POI management, HRT use, and fertility preservation counseling. However, only 38% believed their institutions had adequate resources (mean 2.96 ± 1.24), mirroring the challenges reported in our survey regarding insufficient protocols, diagnostic limitations, cost barriers, patient awareness, and lack of preservation services. These reflect findings in other low-resource settings where institutional constraints hinder full guideline implementation [11].

Correlations between knowledge and practice ($r = 0.614$, $p < .001$) and their positive association with years of experience underscore the value of ongoing education and clinical exposure. Similar to other studies in Nigeria, experienced cadres tend to demonstrate more guideline-concordant care; however, even among consultants/residents, gaps remain, 21% still lacked adequate practice [7].

Multivariate analysis showed that professional cadre, knowledge level, and length of service significantly predicted good practice. Consultants and residents were far more likely (77%) to demonstrate proper management than nurses/midwives (52%) or laboratory staff (33%). This underlines the necessity of role-specific training, particularly among midwives and allied professionals, as frontline providers. Our findings resonate strongly with

ESHRE's 2024 recommendations emphasizing early diagnosis, timely initiation of HRT until the age of natural menopause, routine screening for osteoporosis and cardiovascular risks, multidisciplinary care, and fertility preservation discussions [3].

Conclusion

In conclusion, Nigerian healthcare professionals exhibit commendable understanding and attitudes toward POI, surpassing some benchmarks like those in Brazil, yet significant gaps in protocol implementation, resource availability, and multidisciplinary coordination persist. Our results reinforce global recommendations for holistic POI management and underscore the urgent need for structured institutional support, targeted education, and system-wide reforms to optimize care and health outcomes for Nigerian women.

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