

A Phenomenological Study on Ovarian Reserve Health Risk Experiences, Fertility Difficulties, and Support Needs among Obstetric, Gynecologic, and Pediatric Nurses

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Abstract: *Objective:* To explore the lived experiences of ovarian reserve health risks, fertility difficulties, and support needs among obstetric, gynecologic, and pediatric nurses. *Methods:* A descriptive phenomenological approach was adopted. Semi-structured, in-depth interviews were conducted with nine nurses from obstetrics, gynecology, pediatrics, reproductive medicine, and delivery room departments at a tertiary hospital in China. Data were analyzed using Colaizzi's seven-step method, with sample size determined by data saturation. *Results:* Four core themes emerged: (1) Health risk awareness originated from high occupational exposure, while delayed childbearing was impeded by multiple barriers including economic constraints, career demands, relationship challenges, and work intensity; (2) Health risks and uncertainty triggered stratified negative emotions and differential fertility confidence; (3) Structural conflicts existed between occupational demands and reproductive health maintenance, with individual coping being passive and limited; (4) Organizational support gaps were pronounced, with strong demands for fertility-friendly institutional support. *Conclusions:* Ovarian reserve health anxiety among obstetric, gynecologic, and pediatric nurses primarily stemmed from high clinical exposure and occupational stress, with emotions and fertility experiences exhibiting stratified characteristics. Night shifts, occupational exposures, promotion-related involution, and fertility needs were difficult to reconcile. Hospitals should urgently implement supportive measures, including reduced night shifts, free ovarian function screening, optimized occupational protection protocols, and promotion policy adjustments favoring reproductive health.

Keywords: Obstetric, gynecologic, and pediatric nurses; Ovarian reserve; Health risks; Fertility difficulties; Qualitative research

Online publication: May 31, 2026

1. Introduction

Diminished ovarian reserve (DOR) refers to a reduction in the quantity and/or quality of oocytes within the ovary, leading to decreased fertility, accompanied by reduced anti-Müllerian hormone (AMH), decreased antral follicle count (AFC), and elevated follicle-stimulating hormone (FSH) ^[1]. In recent years, DOR has shown an increasing trend among women of reproductive age, with occupational exposure, psychological stress, and circadian rhythm disruption identified as significant contributing factors ^[2]. As of the end of 2023, China had 5.63 million registered nurses, the vast majority of whom are women ^[3].

Nurses working in obstetrics, gynecology, pediatrics, reproductive medicine centers, and delivery rooms hold a dual identity as both “reproductive health caregivers” and “populations at high risk for reproductive health problems.” They are chronically exposed to cases of infertility, ovarian decline, and assisted reproduction, while simultaneously facing multiple occupational hazards, including rotating night shifts, exposure to chemotherapeutic agents and disinfectants, high-pressure on-call duties, and intense promotion competition. These factors create multidimensional conflicts between their professional responsibilities and reproductive planning ^[9].

At the occupational exposure level, Jiang et al.’s ^[4] nationwide survey of female nurses in China demonstrated that exposure to antineoplastic drugs increased the risk of preterm birth by approximately 2.2-fold (OR = 2.169), while exposure to disinfectants significantly increased the risk of threatened miscarriage (OR = 2.293). Nouri et al.’s ^[5] meta-analysis confirmed that occupational exposure to antineoplastic drugs nearly doubled the risk of spontaneous abortion. Regarding night shift work, Jaafarzadeh et al.’s ^[6] meta-analysis established a significant association between rotating shift work and menstrual disorders, and demonstrated that frequent night shifts (> 25 times) during the first trimester could increase the risk of preterm birth by 2–3 fold, with the underlying mechanism involving melatonin suppression-induced dysfunction of the hypothalamic–pituitary–ovarian (HPO) axis. Furthermore, Zhu et al.’s ^[2] comprehensive review indicated that various environmental toxins and persistent psychological stress could accelerate follicular depletion, suggesting that obstetric, gynecologic, and pediatric nurses face superimposed ovarian damage risks from chemical, physical, and psychological stressors.

At the psychological experience level, Hammond and Marczak’s ^[7] thematic synthesis of ten qualitative studies on premature ovarian insufficiency (POI) revealed that diagnosed women commonly experienced identity disruption, with barriers to accessing support exacerbating emotional distress. Eftekhari et al.’s ^[8] quantitative survey found that only 35% of nurses planned to have children within three years, with occupational stress being the primary negative predictor. However, existing research has several limitations: it predominantly focuses on diagnosed patients, neglecting the unique experiences of nurses who harbor concerns but remain undiagnosed; it relies mainly on quantitative methods, lacking in-depth qualitative exploration of ovarian health risk experiences; and research on nurses’ fertility-friendly organizational support needs is extremely limited.

This study employed a phenomenological qualitative approach to conduct in-depth interviews with nine obstetric, gynecologic, and pediatric nurses spanning different risk statuses, including confirmed DOR, health concerns, menstrual irregularities, and high occupational exposure, aiming to reveal their authentic experiences and provide evidence for constructing an occupational reproductive health protection system for nursing personnel.

2. Methods

2.1. Study design

A descriptive phenomenological qualitative research design was adopted, following the Colaizzi analytic tradition and focusing on obstetric, gynecologic, and pediatric nurses' subjective experiences and meaning-making regarding ovarian reserve health risks.

2.2. Participants

A combined strategy of purposive sampling and maximum variation sampling was employed. Inclusion criteria: (1) currently employed nurses in obstetrics, gynecology, pediatrics, neonatology, reproductive medicine, or delivery room departments; (2) aged 28–30 years; (3) meeting at least one of the following statuses: confirmed DOR, existing ovarian health concerns, menstrual irregularities accompanied by reproductive anxiety, or prolonged high exposure to reproductive clinical cases without explicit concerns; (4) informed consent provided. Exclusion criteria: non-target department assignment, inability to complete the interview due to communication barriers, refusal of audio recording, or withdrawal during the study. The final sample size was determined by data saturation; by the ninth interview, no new themes emerged, indicating information saturation. All nine participants were female, aged 28–30 years; eight were unmarried, one was married; all were nulliparous. Their departmental distribution was: four from pediatrics, one from neonatology, one from gynecology, one from the delivery room, one from obstetrics, and one from reproductive medicine.

2.3. Data collection

One-on-one, face-to-face, semi-structured in-depth interviews were conducted. The interviews explored the following core areas: sources and perception processes of ovarian health risk awareness; the impact of health concerns on emotions and fertility planning; experiences of conflict between the occupational environment and reproductive health maintenance; and coping strategies and organizational support needs. Interviews were conducted in a quiet, private room, lasting 25–45 minutes each, and were audio-recorded in full. Verbatim transcriptions were completed within 24 hours and returned to participants for member checking.

2.4. Data analysis

Data were analyzed using Colaizzi's seven-step method. Two researchers independently coded the data and held regular discussions to reach consensus.

3. Results

3.1. Participant characteristics

Table 1 presents the demographic and risk status information of the nine participants.

Table 1. General participant information (n = 9)

No.	Age	Marital Status	Department	Ovarian Reserve Health Risk Status
N1	28	Unmarried	Pediatrics	Normal test results; concerned
N2	30	Unmarried	Pediatrics	AMH not tested; highly concerned
N3	29	Unmarried	Pediatrics	Confirmed DOR

No.	Age	Marital Status	Department	Ovarian Reserve Health Risk Status
N4	28	Unmarried	Neonatology	Confirmed DOR
N5	28	Married	Pediatrics	No concerns; high exposure only
N6	28	Unmarried	Reproductive Medicine	Normal test results; concerned
N7	30	Unmarried	Gynecology	Irregular menstruation; concerned
N8	29	Unmarried	Delivery Room	Mild concern; long-distance relationship
N9	28	Married	Obstetrics	Irregular menstruation; concerned

3.2. Core themes

Through Colaizzi's seven-step analysis, four core themes were identified.

3.2.1. Theme 1: Health risk awareness originating from high occupational exposure, fertility planning delayed by multiple practical barriers

All participants' knowledge of ovarian reserve originated from their clinical rotation experiences and informal exchanges about colleagues' cases, rather than from systematic health education. Participant N6 stated: "In the reproductive medicine center, I see many young colleagues with very low AMH. If you don't get tested, you're fine. Once tested, anxiety sets in." N1 shared: "During my rotation in the reproductive department, I encountered patients around age 30 with AMH as low as 0.1–0.2, close to my own age. It worried me enormously." Delayed fertility planning was hindered by multiple factors: economic pressure (high child-rearing costs, insufficient material security); occupational pressure (promotion requirements, publications, competitions, night shifts consuming substantial energy); relationship barriers (limited social circles, long-distance relationships); and work intensity (frequent night shifts leading to physical and mental exhaustion), collectively creating a predicament of "wanting to have children but being unable to."

3.2.2. Theme 2: Health risks and uncertainty triggering stratified emotions and differential fertility confidence

Participants' emotional responses and fertility confidence exhibited clear stratification according to health risk status. The confirmed diagnosis group (N3, N4) initially experienced fear and shock as predominant emotions, gradually transitioning to acceptance, with fertility confidence markedly diminished, where N4 described: "It was terrifying and shocking, to experience ovarian decline at such a young age is hard to believe." The concerned/irregular menstruation group (N1, N2, N6, N7, N9) manifested persistent anxiety, closely monitoring their menstrual cycles and test indicators, with some proactively advancing their fertility plans, where N9 stated: "With so many night shifts and frequently delayed menstruation, I am very worried about my ovaries." The low-anxiety group (N5, N8) exhibited emotional stability, more influenced by practical constraints, regarding assisted reproduction as a psychological fallback, where N8 expressed: "With IVF as a backup, I'm not anxious; it's mainly the long-distance situation holding things up." A common feature across all groups was that clinical scenarios continuously intensified their anxiety levels, forming a cycle of "witnessing cases → self-projection → heightened emotion."

3.2.3. Theme 3: Structural conflicts between occupational demands and reproductive health maintenance, with passive and limited individual coping

Four levels of core conflict were repeatedly mentioned: (1) night shift-induced circadian disruption leading

to irregular menstruation and endocrine abnormalities (N9, N6); (2) direct reproductive harm from exposure to chemotherapeutic agents, formaldehyde, and infectious environments (N1, N6); (3) persistent tension from 24-hour work phone on-call duties and resuscitation emergencies; and (4) promotion criteria tied to night shift quotas, forcing a binary choice between career advancement and fertility (N7). In terms of coping, participants generally adopted passive strategies such as menstrual monitoring, regular check-ups, dietary supplementation, health products, and traditional Chinese medicine regulation, none of which could adequately offset occupational harm. N1 frankly acknowledged: “Night shifts are unavoidable—I can only monitor my sleep, supplement my energy, and self-regulate to minimize physical depletion.”

3.2.4. Theme 4: Pronounced organizational support gaps and strong demands for fertility-friendly support

Participants’ demands for organizational support spanned five dimensions, expressed with high consistency and urgency: scheduling support, reduced night shifts and flexible scheduling for those preparing for pregnancy, of reproductive age, or with menstrual disorders (N8, N9); health support, adding AMH, sex hormones, and ovarian ultrasound to health examinations and providing free screening (N3, N9); environmental support, reassignment of pregnancy-planning personnel away from chemotherapy, high-risk infection, and formaldehyde exposure posts (N1); career support, reducing promotion-related involution and eliminating unreasonable night shift quota requirements (N2, N6); and security and psychological support, increasing salaries, including assisted reproduction in health insurance coverage (N9), and organizing health lectures and psychological counseling (N6). The high consistency of these multidimensional needs indicates a significant gap in reproductive health dimensions within existing occupational health systems.

4. Discussion

This study revealed that the core source of ovarian health anxiety among obstetric, gynecologic, and pediatric nurses was not merely somatic symptoms but a dual driver of “high clinical exposure + occupational stress.” Zhu et al.’s ^[2] review had already confirmed occupational factors and environmental toxins as significant external triggers for DOR, while Jiang et al. ^[4] and Nouri et al. ^[5] corroborated the reproductive hazards of occupational chemical exposure at the quantitative level. This study offers experiential-level evidence revealing that even with normal test results, this population remains in a state of heightened vigilance—a phenomenon of “premature vigilance” that constitutes a unique finding of the present study, suggesting that occupational exposure has been “internalized” into psychological risk perception, extending beyond the objective risk scope described in the literature ^[4,5].

Regarding the emotional and fertility confidence dimension, Hammond and Marczak’s ^[7] thematic synthesis of qualitative studies on diagnosed POI women showed that diagnosed individuals experienced identity disruption and barriers to support access. The present study confirmed and extended this finding: not only did the confirmed diagnosis group experience identity disruption, but the concerned/irregular menstruation group and the low-anxiety group exhibited distinct experiential patterns, indicating a broad “gray zone” between “diagnosis” and “complete absence of concerns,” where a domain that previous research exclusively focused on diagnosed patients ^[7] could not capture. Eftekhari et al. ^[8] found that only 35% of nurses planned to have children within three years; from a qualitative perspective, the present study reveals

that declining fertility confidence does not exist in isolation but is produced through the intertwining of health uncertainty, occupational stress, economic burden, and relationship difficulties, with dominant barriers differing across risk statuses, suggesting that support strategies should be stratified.

The structural contradiction between occupation and reproductive health represents another core finding. Jaafarzadeh et al. ^[6] confirmed the biological mechanisms linking rotating shift work and menstrual disorders; the present study supplements this from a sociological dimension: even when participants fully recognized the harm of night shifts, at the institutional level they were still “unavoidable” (N1), and the institutional design tying promotion criteria to night shift quotas actively positioned career development against reproductive health (N7). The highly passive nature of individual coping strategies further confirms the institutional origin of the problem. This stands in contrast to the requirements of the “Healthy China” strategy for whole-life-cycle health protection of occupational populations.

Regarding support needs, the multidimensional and highly consistent demands of participants indicate that this population exists in a state of quadruple superimposition: “high exposure, high risk, high stress, low support,” filling an empirical gap in the field of occupational reproductive health protection for nurses. The innovation of this study lies in being the first to systematically include populations across four risk statuses, revealing the “stratified” nature of experiences, and deeply exploring the pathway of “high occupational exposure → risk internalization → psychological anxiety.” Limitations include the single-center design, small sample size (n = 9), and concentration of participants within the 28–30 age range with nulliparous status, limiting external validity; additionally, the exclusive use of qualitative methods precludes quantification of exposure–effect dose–response relationships. Future research could adopt multi-center, mixed-methods designs, include nurses across different ages and parity statuses, and incorporate biomarkers such as AMH testing to establish a more comprehensive evidence base.

5. Conclusion

Ovarian reserve health risk perception among obstetric, gynecologic, and pediatric nurses is significantly amplified by high occupational exposure, with the phenomenon of “premature vigilance” being prevalent. Emotional responses and fertility confidence exhibit stratified differences. Structural conflicts exist between night shifts, occupational exposure, high-pressure on-call duties, promotion-related involvement, and reproductive health maintenance, with individual coping being passive and limited. Organizational support gaps are pronounced across scheduling, health screening, occupational protection, and promotion burden reduction dimensions. It is recommended that hospitals optimize scheduling systems, integrate ovarian function indicators into free health examinations, establish standardized protocols for reassigning pregnancy-planning personnel, and reduce the degree of promotion-related involution, thereby constructing a fertility-friendly occupational environment.

6. Future Directions

Future multi-center, large-sample studies incorporating quantitative analyses of occupational factors are warranted. Intervention studies should be designed to verify the effectiveness of fertility-friendly policies. Research perspectives could be broadened by including nurses of different ages and parity statuses.

Disclosure statement

The authors declare no conflict of interest.

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