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Comprehensive Reproductive and Endocrine Hormonal Profiling Across the Female Reproductive Age Spectrum: A Cross-Sectional Study

Mst. Sadiya Khatun[1], Tania Akter[2], Shakila Akhter[3], Md. Fahim Zawaed[4], Aysha Chowdhury[5], Most. Naznin Aktar Khanam[6], Tasnia Mahmud Nisha[7], Nilufa Khatun Nayle[8*]

Abstract

Background: Reproductive hormonal profiles vary with age and menstrual characteristics. FSH, LH, estradiol, progesterone, prolactin, and AMH provide important information on reproductive endocrine function, but integrated evidence across age groups remains limited in the local population.

Objective: This study aimed to assess reproductive and endocrine hormonal profiles among women of reproductive age and to examine their association with age and menstrual characteristics.

Methods: Methods: A cross-sectional study was conducted among 150 women aged 18–45 years at a tertiary care hospital in Dhaka, Bangladesh, from August 2025 to February 2026. Demographic, menstrual, reproductive, and clinical data were collected from hospital records and through participant interviews. Serum FSH, LH, estradiol, progesterone, prolactin, and AMH were measured using standardized laboratory methods. Hormonal profiles were compared across age groups and menstrual patterns, with correlations assessed between age and selected hormones. A p-value of <0.05 was considered statistically significant.

Results: Of the 150 participants, 62 (41.3%) were aged 18–25 years, 53 (35.3%) were aged 26–35 years, and 35 (23.3%) were aged 36–45 years. Regular menstrual cycles were reported by 118 (78.7%) participants, while 32 (21.3%) reported irregular cycles. Mean FSH increased progressively across age groups from 5.8±2.1 IU/L in the 18–25-year group to 7.2±3.0 IU/L and 10.1±4.8 IU/L in the 26–35- and 36–45-year groups, respectively ($p<0.001$). In contrast, mean AMH decreased significantly from 4.1±2.0 ng/mL to 2.8±1.6 ng/mL and 1.5±1.1 ng/mL across the corresponding age groups ($p<0.001$). Women with irregular menstrual cycles had significantly higher FSH (9.4±4.7 vs. 6.7±3.0 IU/L, $p=0.002$) and LH (9.8±5.1 vs. 6.9±3.4 IU/L, $p=0.004$) than women with regular cycles, whereas AMH was significantly lower (2.1±1.5 vs. 3.2±1.9 ng/mL, $p=0.001$). Age showed a significant positive correlation with FSH ($r=0.49$, $p<0.001$) and LH ($r=0.31$, $p<0.001$), while AMH demonstrated a significant inverse correlation with age ($r=-0.61$, $p<0.001$). Prolactin abnormalities were identified in 18 (12.0%) participants, while 28 (18.7%) demonstrated biochemical evidence of reduced ovarian reserve according to the predefined AMH criterion.

Conclusion: Reproductive hormone profiles varied significantly with age and menstrual regularity. Increasing age was associated with higher FSH and lower AMH levels, while irregular menstruation was associated with higher FSH and LH and lower AMH concentrations.

Affiliation:

[1]Faculty of Nursing, Dhaka Central International Nursing College & Institute, Dhaka, Bangladesh

[2]Department of Urogynaecology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh

[3]Department of Pediatrics, Terre Des Hommes Foundation in Bangladesh

[4]Department of Anaesthesia, ICU & Pain Medicine, Rajshahi Medical college Hospital, Rajshahi, Bangladesh

[5]Department of Obstetrics & Gynaecology, Jalalabad Ragib Rabeya Medical College and Hospital, Sylhet, Bangladesh

[6]Department of Obstetrics & Gynaecology, BACC Hospital, Dhaka, Bangladesh

[7]Department of Microbiology, Brac University, Dhaka, Bangladesh

[8]Department of Gynaecology and Obstetrics, Shahabuddin Medical College, Dhaka, Bangladesh

***Corresponding author:**
Dr. Nilufa Khatun Nayle, Registrar Department of Gynaecology and Obstetrics Shahabuddin Medical College, Bangladesh

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Keywords: Reproductive hormones; FSH; LH; AMH; Menstrual irregularity

Introduction

Female reproductive function is governed by a complex and dynamic interaction between the hypothalamic–pituitary–ovarian (HPO) axis and the ovarian follicular pool [1]. Throughout the reproductive lifespan, coordinated changes in gonadotropins and ovarian steroid hormones regulate follicular development, ovulation, endometrial preparation, and menstrual cyclicity [2]. Disruption of this endocrine network may manifest as menstrual irregularity, anovulation, impaired reproductive function, or altered ovarian reserve. Given the increasing recognition of reproductive disorders and infertility as important global health concerns, characterization of endocrine and reproductive biomarkers across different stages of reproductive life remains clinically relevant [3]. The World Health Organization estimates that approximately one in six people experience infertility during their lifetime, highlighting the substantial global burden of reproductive dysfunction and the need for improved understanding of its biological determinants [4]. Follicle-stimulating hormone (FSH) and luteinizing hormone (LH) are central regulators of ovarian function. FSH promotes follicular recruitment and maturation, whereas LH contributes to follicular steroidogenesis, ovulation, and corpus luteum formation [5]. Their circulating concentrations change with reproductive ageing and alterations in ovarian feedback mechanisms. As the ovarian follicular pool progressively declines with age, reduced negative feedback may contribute to increasing FSH concentrations, while changes in LH secretion may emerge at later stages of reproductive ageing [6]. Importantly, age-related endocrine changes can occur even among women who continue to experience apparently regular menstrual cycles, suggesting that chronological age and endocrine ovarian ageing are closely interconnected but not completely captured by menstrual characteristics alone [7]. Anti-Müllerian hormone (AMH), produced predominantly by granulosa cells of pre-antral and small antral follicles, has emerged as an important biomarker of ovarian reserve. Unlike gonadotropins and ovarian steroid hormones, AMH is relatively less dependent on the stage of the menstrual cycle and reflects the pool of growing follicles7. Evidence indicates that AMH generally declines with advancing age and may decrease before a clinically apparent rise in FSH, making it a sensitive biomarker for assessing quantitative changes in ovarian reserve. However, ovarian reserve biomarkers should be interpreted within the context of age and the overall clinical picture because AMH and other reserve measures are not independent predictors of a woman's natural reproductive potential [8]. Beyond ovarian reserve, the interpretation of reproductive endocrine function requires consideration of estradiol, progesterone, and prolactin. Estradiol reflects follicular activity and undergoes substantial variation during the menstrual cycle, whereas progesterone provides an important indicator of luteal activity and ovulatory physiology [9]. Prolactin is primarily involved in lactation but also interacts with reproductive function, and abnormal prolactin concentrations may contribute to menstrual disturbances and ovulatory dysfunction. Consequently, assessment of individual hormones in isolation may provide an incomplete representation of reproductive endocrine status. Contemporary clinical guidance emphasizes the importance of interpreting reproductive hormone measurements according to clinical context, menstrual characteristics, age, and the specific biological question being addressed [10]. Menstrual regularity represents an important clinically accessible indicator of reproductive endocrine function. Although irregular menstruation can result from diverse causes-including endocrine disorders, ovarian dysfunction, metabolic abnormalities, and disturbances of the HPO axis-differences in circulating reproductive hormones may provide additional biological insight into these phenotypes. Recent evidence from Bangladesh has also demonstrated a substantial burden of menstrual irregularity among women and has highlighted the importance of understanding menstrual characteristics within the local population [11]. However, much of the available literature has focused on individual conditions such as polycystic ovary syndrome, infertility, or menstrual abnormalities rather than examining multiple reproductive and endocrine biomarkers simultaneously across a broad female reproductive-age spectrum [12]. A comprehensive assessment incorporating FSH, LH, estradiol, progesterone, prolactin, and AMH may therefore provide a more integrated perspective on reproductive endocrine status, particularly when hormonal patterns are examined in relation to age and menstrual regularity. Such an approach can help distinguish age-associated hormonal changes from patterns associated with menstrual dysfunction and may contribute to more appropriate interpretation of laboratory findings in reproductive-age women. Nevertheless, population-specific data describing the simultaneous distribution of these hormonal biomarkers across different age groups remain limited, particularly in South Asian clinical settings. The present study was designed to address this gap by evaluating a cohort of women across the reproductive age spectrum and examining hormonal variation according to age and menstrual characteristics. This study aimed to assess reproductive and endocrine hormonal profiles among women of reproductive age and to examine their association with age and menstrual characteristics.

Methodology

A cross-sectional study was conducted among 150 women aged 18-45 years at a tertiary care hospital in Dhaka,

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Bangladesh, from August 2025 to February 2026. Participants were enrolled according to predefined eligibility criteria and categorized into three age groups: 18-25, 26-35, and 36-45 years. Relevant demographic, menstrual, reproductive, and clinical information was collected from hospital records and through direct communication with the participants using a structured data collection approach. Information obtained from participants included menstrual regularity, parity, and relevant reproductive history, while available clinical and laboratory information was obtained from hospital records. Menstrual regularity was assessed based on participants reported menstrual patterns, allowing comparison of endocrine profiles between women with regular and irregular menstrual cycles. Following enrollment, venous blood samples were collected from the participants for assessment of reproductive and endocrine hormonal biomarkers. Serum concentrations of follicle-stimulating hormone (FSH), luteinizing hormone (LH), estradiol, progesterone, prolactin, and anti-Müllerian hormone (AMH) were measured using standardized laboratory methods. The laboratory results were recorded from the hospital laboratory records and interpreted according to the applicable laboratory reference ranges and predefined study criteria. The hormonal findings were subsequently evaluated according to participants' age groups, menstrual characteristics, and selected reproductive variables to determine variations in reproductive endocrine profiles across the female reproductive age spectrum. The collected information was systematically compiled and analyzed using appropriate statistical procedures. Continuous variables were summarized as mean ± standard deviation, whereas categorical variables were presented as frequencies and percentages. Hormonal concentrations were compared across the three predefined age groups to assess age-related differences and were also compared between women with regular and irregular menstrual cycles. Correlation analyses were performed to examine the relationships between age and selected hormonal parameters, particularly FSH, LH, and AMH. Associations between reproductive characteristics and hormonal abnormalities were also assessed where appropriate. All statistical tests were two-sided, and a p-value of <0.05 was considered statistically significant.

Results

A total of 150 women aged 18-45 years were included in the present study. The mean age of the participants was 28.9±8.1 years. Among the participants, 62 (41.3%) were aged 18–25 years, 53 (35.3%) were aged 26–35 years, and 35 (23.3%) were aged 36–45 years. Most participants reported regular menstrual cycles (118, 78.7%), whereas 32 (21.3%) reported irregular menstrual cycles. Regarding parity, 61 (40.7%) participants were nulliparous, 29 (19.3%) were primiparous, and 60 (40.0%) were multiparous.

Table 1: Sociodemographic and reproductive characteristics of study participants (N=150).

Characteristics	Number (n)	Percentage (%)
Age group (years)		
18–25	62	41.3
26–35	53	35.3
36–45	35	23.3
Menstrual regularity		
Regular	118	78.7
Irregular	32	21.3
Parity		
Nulliparous	61	40.7
Primiparous	29	19.3
Multiparous	60	40
History of reproductive/endocrine disorder		
No reported history	126	84
Present	24	16

The distribution of participants showed a gradual reduction in sample representation with increasing age. The youngest age group accounted for 41.3% of the study population, while women aged 36–45 years represented 23.3%. Regular menstruation was considerably more common than irregular menstruation. Approximately two-fifths of participants were nulliparous, while a similar proportion were multiparous.

Hormonal profile across age groups

Substantial variation in reproductive hormone concentrations was observed across the three age groups. Mean FSH concentration increased progressively with age, from 5.8±2.1 IU/L among women aged 18-25 years to 7.2±3.0 IU/L among those aged 26–35 years and 10.1±4.8 IU/L among those aged 36–45 years ($p<0.001$). In contrast, AMH demonstrated a marked decline across increasing age groups. Mean AMH decreased from 4.1±2.0 ng/mL in the youngest group to 2.8±1.6 ng/mL in the 26–35-year group and 1.5±1.1 ng/mL in the oldest group ($p<0.001$). Mean LH also increased with age, although the magnitude of change was less pronounced than that observed for FSH. Estradiol and progesterone showed greater between-participant variability, with significant differences across age groups.

The most prominent age-related changes were observed for FSH and AMH. Compared with women aged 18–25 years, mean FSH was approximately 24% higher in the 26-35-year group and approximately 74% higher in women aged 36-45 years. Conversely, mean AMH decreased by approximately 32% and 63% in the corresponding age groups. LH also demonstrated a statistically significant increase with age ($p=0.006$), while estradiol and progesterone

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Table 2: Reproductive and endocrine hormonal profile according to age group.

Hormonal parameter	18–25 years (n=62)	26–35 years (n=53)	36–45 years (n=35)	p-value
FSH (IU/L)	5.8 ± 2.1	7.2 ± 3.0	10.1 ± 4.8	<0.001
LH (IU/L)	6.2 ± 3.1	7.0 ± 3.5	8.6 ± 4.3	0.006
Estradiol (pg/mL)	142.6 ± 61.4	128.7 ± 57.8	111.5 ± 52.6	0.021
Progesterone (ng/mL)	8.7 ± 4.2	7.9 ± 4.0	6.5 ± 3.7	0.018
Prolactin (ng/mL)	17.9 ± 6.4	18.7 ± 7.1	20.1 ± 8.3	0.241
AMH (ng/mL)	4.1 ± 2.0	2.8 ± 1.6	1.5 ± 1.1	<0.001

Values are presented as mean ± standard deviation. p-values represent comparisons across the three age groups.

Table 3: Comparison of reproductive hormone concentrations according to menstrual regularity.

Hormonal parameter	Regular cycle (n=118)	Irregular cycle (n=32)	p-value
FSH (IU/L)	6.7 ± 3.0	9.4 ± 4.7	**0.002**
LH (IU/L)	6.9 ± 3.4	9.8 ± 5.1	**0.004**
Estradiol (pg/mL)	133.8 ± 58.2	111.4 ± 49.7	0.032
Progesterone (ng/mL)	8.1 ± 4.0	6.3 ± 3.5	0.015
Prolactin (ng/mL)	18.2 ± 6.8	20.9 ± 8.4	0.048
AMH (ng/mL)	3.2 ± 1.9	2.1 ± 1.5	**0.001**

Women with irregular menstrual cycles therefore demonstrated a hormonal profile characterized predominantly by increased gonadotropin concentrations and reduced AMH. The difference in AMH was particularly pronounced, with the mean concentration approximately 34% lower among women with irregular cycles. These findings indicate a significant association between menstrual regularity and selected reproductive endocrine parameters.

showed modest but statistically significant reductions across the age categories. No statistically significant difference was observed in prolactin concentrations between the age groups (p=0.241).

Hormonal profile according to menstrual regularity

A significant difference in selected hormonal parameters was observed between women with regular and irregular menstrual cycles. Participants with irregular menstrual cycles had significantly higher mean FSH concentrations than those with regular cycles (9.4±4.7 vs. 6.7±3.0 IU/L, p=0.002). Similarly, LH concentrations were significantly higher among women with irregular cycles (9.8±5.1 vs. 6.9±3.4 IU/L, p=0.004). In contrast, mean AMH concentration was significantly lower among women with irregular cycles than among those with regular cycles (2.1±1.5 vs. 3.2±1.9 ng/mL, p=0.001). Estradiol and progesterone concentrations were also lower in the irregular-cycle group, while prolactin concentrations were comparatively higher.

Correlation between age and reproductive hormones

Correlation analysis demonstrated significant relationships between age and several reproductive hormones. FSH showed a moderate positive correlation with age (r=0.49, p<0.001), indicating a tendency toward increasing FSH concentrations with advancing age. LH also demonstrated a positive correlation with age (r=0.31, p<0.001). The strongest association was observed between age and AMH. A significant inverse correlation was identified between age and AMH concentration (r=−0.61, p<0.001), indicating that AMH levels decreased substantially with increasing age. Estradiol and progesterone demonstrated weaker inverse associations with age, while prolactin showed a weak positive correlation that did not reach statistical significance.

Frequency of hormonal abnormalities

Hormonal abnormality analysis showed that prolactin abnormalities were identified in 18 (12.0%) participants. Based on the predefined study-specific AMH threshold, biochemical evidence suggestive of reduced ovarian reserve was observed in 28 (18.7%) participants. Other hormonal abnormalities were also observed, although at varying frequencies. FSH abnormalities were more common among women in the older age groups, whereas reduced AMH was predominantly observed among participants aged 36–45 years. The proportion of participants with at least one reproductive hormonal abnormality was higher among women with irregular menstrual cycles than among those with regular cycles.

Age-specific distribution of selected hormonal abnormalities

The frequency of selected abnormalities increased with age, particularly for elevated FSH and reduced AMH. Women aged 36-45 years demonstrated the highest proportion of

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reduced AMH, whereas the youngest group showed the lowest frequency.

Relationship between menstrual irregularity and selected hormonal abnormalities

Women with irregular menstrual cycles showed a greater burden of hormonal abnormalities compared with participants reporting regular cycles. Reduced AMH and elevated FSH were particularly more frequent among women with irregular menstruation.

Women with irregular menstrual cycles had significantly higher proportions of elevated FSH and reduced AMH compared with women with regular cycles. Elevated FSH was identified in 31.3% of women with irregular cycles compared with 9.3% of women with regular cycles (p=0.002). Similarly, reduced AMH was observed in 34.4% of women with irregular cycles compared with 14.4% of women with regular cycles (p=0.008). Elevated LH was also more frequent in the irregular-cycle group (21.9% vs. 8.5%), with the difference reaching statistical significance (p=0.046).

Table 4: Correlation between age and reproductive hormone concentrations.

Hormonal parameter	Correlation coefficient (r)	Direction	p-value
FSH	0.49	Positive	<0.001
LH	0.31	Positive	<0.001
Estradiol	−0.19	Negative	0.019
Progesterone	−0.22	Negative	0.007
Prolactin	0.12	Positive	0.143
AMH	−0.61	Negative	<0.001

The correlation findings were consistent with the age-group comparisons. In particular, the inverse relationship between age and AMH was stronger than the corresponding associations observed for estradiol and progesterone. Conversely, FSH demonstrated a moderate positive association with age, supporting the observed progressive increase in FSH across the three age groups.

Table 5: Frequency of selected reproductive and endocrine hormonal abnormalities (N=150).

Hormonal/clinical indicator	Number (n)	Percentage (%)
Elevated FSH	21	14
Elevated LH	17	11.3
Estradiol abnormality	19	12.7
Progesterone abnormality	23	15.3
Prolactin abnormality	18	12
Reduced AMH / reduced ovarian reserve	28	18.7
At least one hormonal abnormality	43	28.7
Two or more hormonal abnormalities	17	11.3

Among the evaluated biomarkers, reduced AMH according to the predefined criterion was the most frequently observed specific abnormality, affecting 18.7% of participants. Progesterone abnormalities were observed in 15.3%, while elevated FSH and estradiol abnormalities were identified in 14.0% and 12.7% of participants, respectively. Prolactin abnormalities were present in 12.0% of participants. Overall, 43 (28.7%) participants had at least one hormonal abnormality, whereas 17 (11.3%) had abnormalities involving two or more hormonal parameters.

Table 6: Age-specific distribution of selected hormonal abnormalities.

Abnormality	18–25 years (n=62)	26–35 years (n=53)	36–45 years (n=35)	p-value
Elevated FSH, n (%)	3 (4.8)	7 (13.2)	11 (31.4)	<0.001
Elevated LH, n (%)	4 (6.5)	6 (11.3)	7 (20.0)	0.084
Estradiol abnormality, n (%)	5 (8.1)	7 (13.2)	7 (20.0)	0.173
Progesterone abnormality, n (%)	7 (11.3)	8 (15.1)	8 (22.9)	0.302
Prolactin abnormality, n (%)	6 (9.7)	6 (11.3)	6 (17.1)	0.563
Reduced AMH, n (%)	3 (4.8)	8 (15.1)	17 (48.6)	<0.001

The prevalence of elevated FSH increased significantly across age groups, from 4.8% among women aged 18–25 years to 31.4% among those aged 36–45 years (p<0.001). A similar but more pronounced age-related pattern was observed for reduced AMH, which increased from 4.8% in the youngest group to 48.6% in the oldest group (p<0.001). Other hormonal abnormalities showed increasing trends with age, although these differences did not reach statistical significance.

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Discussion

In the present study, mean FSH increased progressively from 5.8±2.1 IU/L among women aged 18–25 years to 7.2±3.0 IU/L among those aged 26–35 years and 10.1±4.8 IU/L among women aged 36–45 years ($p<0.001$). This pattern is biologically consistent with the process of reproductive ageing. As the ovarian follicular pool decreases with age, ovarian feedback to the hypothalamic–pituitary system is altered, resulting in increased pituitary FSH secretion. The American Society for Reproductive Medicine (ASRM) describes declining follicular reserve with age as being accompanied by reduced inhibitory feedback and, consequently, increasing FSH concentrations. Thus, the progressive increase in FSH observed in our participants is compatible with established reproductive endocrinology and supports the presence of age-related endocrine changes within the studied population [13]. A particularly important finding was the significant decline in AMH across age groups. Mean AMH decreased from 4.1±2.0 ng/mL in women aged 18–25 years to 2.8±1.6 ng/mL in those aged 26–35 years and 1.5±1.1 ng/mL among women aged 36–45 years ($p<0.001$). Furthermore, age showed a significant inverse correlation with AMH ($r=-0.61$, $p<0.001$). This relatively strong inverse association indicates that AMH was one of the most age-sensitive biomarkers in our study. The finding is consistent with evidence that AMH reflects the pool of growing ovarian follicles and generally declines as ovarian reserve decreases with age [14]. ASRM notes that AMH tends to decline earlier than FSH rises and is therefore considered a sensitive biochemical marker of ovarian reserve. The magnitude of the age-related AMH decline observed in our study is also consistent with population-level evidence from other settings. A large Korean study involving 13,351 reproductive-aged women reported a marked increase in diminished ovarian reserve with advancing age, with particularly substantial increases after the mid-30s. Although direct comparison of prevalence should be made cautiously because AMH and FSH thresholds, study populations, and clinical characteristics may differ, both studies demonstrate the same overall biological pattern: ovarian reserve-related biomarkers become progressively less favorable with increasing age [15,16]. The present study also identified significant differences according to menstrual regularity. Women with irregular menstrual cycles had significantly higher FSH concentrations than women with regular cycles (9.4±4.7 vs. 6.7±3.0 IU/L, $p=0.002$). Similarly, LH was significantly higher among women with irregular cycles (9.8±5.1 vs. 6.9±3.4 IU/L, $p=0.004$). In contrast, AMH was significantly lower among women with irregular menstruation (2.1±1.5 vs. 3.2±1.9 ng/mL, $p=0.001$). This combination of higher gonadotropins and lower AMH suggests that menstrual irregularity in the studied population was accompanied by measurable alterations in ovarian endocrine function [17]. However, because menstrual irregularity can arise from multiple causes, these findings should be interpreted as associations rather than evidence of a specific underlying disorder. The relationship between menstrual irregularity and ovarian reserve is also biologically plausible. ASRM describes later reproductive ageing as a period in which menstrual cycles may become irregular and ovarian reserve becomes lower than during earlier reproductive stages. Nevertheless, menstrual irregularity is not synonymous with diminished ovarian reserve. Conditions such as ovulatory dysfunction and other endocrine disturbances may produce irregular cycles without necessarily indicating reduced ovarian reserve. Therefore, the lower AMH observed among participants with irregular cycles should be interpreted alongside age and the broader clinical context rather than as an independent diagnostic indicator [18,19]. The correlation analysis further strengthened the observed age-related pattern. Age showed a moderate positive correlation with FSH ($r=0.49$, $p<0.001$) and a weaker but significant positive correlation with LH ($r=0.31$, $p<0.001$), whereas AMH demonstrated a stronger inverse correlation with age ($r=-0.61$, $p<0.001$). The consistency between the correlation analysis and age-group comparisons increases the internal coherence of the findings. In particular, the stronger inverse relationship between age and AMH compared with the positive association between age and FSH supports the concept that AMH may provide an earlier or more sensitive indication of quantitative ovarian reserve changes. This interpretation is consistent with ASRM guidance, which identifies AMH as a more sensitive ovarian-reserve marker than FSH in many clinical contexts [20]. Prolactin abnormalities were identified in 12.0% of participants, indicating that a measurable proportion of women had abnormalities in an additional endocrine pathway relevant to reproductive function. However, the present study did not establish whether these abnormalities were responsible for menstrual irregularity, and causal interpretation would require more detailed clinical assessment. This is important because reproductive endocrine function is multifactorial, and isolated abnormalities in a single hormone may not adequately explain a participant's reproductive phenotype.

Conclusion

This study demonstrated significant age-related changes in reproductive and endocrine hormonal profiles among women aged 18–45 years. FSH concentrations increased progressively with advancing age, whereas AMH concentrations showed a significant decline. The significant positive correlation of age with FSH and the strong inverse correlation with AMH further supported these age-related hormonal changes. Women with irregular menstrual cycles had significantly higher FSH and LH concentrations and lower AMH levels than women with regular menstrual cycles. Overall, the findings indicate that age and menstrual characteristics are important factors associated with reproductive hormonal variation. Age-specific

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and clinically contextualized interpretation of reproductive hormone profiles may therefore provide useful information for evaluating reproductive endocrine status among women of reproductive age.

Limitations

This study has several limitations. First, the cross-sectional design limits the ability to establish temporal or causal relationships between age, menstrual irregularity, and hormonal changes. Second, the study was conducted at a single tertiary care hospital in Dhaka, Bangladesh, and the relatively limited sample size of 150 participants may restrict the generalizability of the findings to the wider female population. Third, reproductive hormone concentrations may vary according to the phase of the menstrual cycle, particularly FSH, LH, estradiol, and progesterone; therefore, variation in the timing of sample collection may have influenced the observed hormonal levels if cycle phase was not standardized. Fourth, menstrual regularity and some reproductive characteristics were based on information provided by participants and may therefore be subject to recall or reporting bias. Finally, although AMH was used as an indicator related to ovarian reserve, hormonal biomarkers should not be interpreted as standalone measures of natural fertility, and additional clinical, ultrasonographic, and longitudinal assessments would provide a more comprehensive evaluation.

Author Contributions

Conceptualization: Mst. Sadiya Khatun, Tania Akter, Nilufa Khatun Nayle.

Study Rationale and Objectives: Mst. Sadiya Khatun, Shakila Akhter, Md. Fahim Zawaed.

Methodology: Tania Akter, Shakila Akhter, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

Data Collection: Md. Fahim Zawaed, Aysha Chowdhury, Most. Naznin Aktar Khanam.

Data Curation: Aysha Chowdhury, Most. Naznin Aktar Khanam, Tasnia Mahmud Nisha.

Formal Analysis: Tania Akter, Shakila Akhter, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

Writing – Original Draft: Mst. Sadiya Khatun, Md. Fahim Zawaed, Aysha Chowdhury.

Writing – Review & Editing: Mst. Sadiya Khatun, Tania Akter, Shakila Akhter, Md. Fahim Zawaed, Aysha Chowdhury, Most. Naznin Aktar Khanam, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

Final Approval: All authors read and approved the final manuscript.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

Author Contributions

Conceptualization: Mst. Sadiya Khatun, Tania Akter, Nilufa Khatun Nayle.

Study Rationale and Objectives: Mst. Sadiya Khatun, Shakila Akhter, Md. Fahim Zawaed.

Methodology: Tania Akter, Shakila Akhter, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

Data Collection: Md. Fahim Zawaed, Aysha Chowdhury, Most. Naznin Aktar Khanam.

Data Curation: Aysha Chowdhury, Most. Naznin Aktar Khanam, Tasnia Mahmud Nisha.

Formal Analysis: Tania Akter, Shakila Akhter, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

Writing – Original Draft: Mst. Sadiya Khatun, Md. Fahim Zawaed, Aysha Chowdhury.

Writing – Review & Editing: Mst. Sadiya Khatun, Tania Akter, Shakila Akhter, Md. Fahim Zawaed, Aysha Chowdhury, Most. Naznin Aktar Khanam, Tasnia Mahmud Nisha, Nilufa Khatun Nayle.

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