GACOPA MEDICAL JOURNAL



ISSN 2720-765X

GACOPA MEDICAL JOURNAL
Official Journal of the Global Association of Clinical Officers and Physician Associates E-ISSN -2720-765X

ORIGINAL ARTICLE

PATTERN OF BIOCHEMICAL INFERTILITY AMONG FEMALE PARTNERS OF INFERTILE COUPLES: A FOUR-YEAR REVIEW AT NIZAMIYE HOSPITAL, ABUJA

AbdulAzeez I.M.[1,*], Biliaminu S.A.[1], Khan N.[2], Bakr M.R.[2], Oladosu W.O.[3], Yusuff J.O.[1], Okesina A.B.[1]

GACOPA Med J 2026; 2(1): 1-6 https://doi.0rg/10.71396/34dz0n26

[1] Department of Chemical Pathology and Immunology, University of Ilorin, Ilorin, Kwara State, Nigeria

[2] Obstetrics and Gynaecology Unit, Nizamiye Hospital, Abuja, Nigeria

[3] Department of Chemical Pathology, Federal Medical Centre, Abeokuta, Ogun State, Nigeria

Correspondence author: **Dr. AbdulAzeez Ishola Musbau** [1] Email: abdulazeezmusbau@yahoo.com

Conflict of interest: None declared

ABSTRACT

Background: Infertility is a significant global health and socio-psychological burden, affecting an estimated 60–80 million couples worldwide, with a disproportionate impact in sub-Saharan Africa. Among its various aetiologies, biochemical derangements represent an important, treatable cause. Data on biochemical infertility patterns from private Nigerian hospitals remain scarce. **Objectives:** To determine the pattern and prevalence of biochemical abnormalities among female partners of infertile couples attending Nizamiye Hospital, Abuja — a private tertiary facility — and to compare findings with those from public health institutions**. Materials and Methods:** A retrospective, cross-sectional review of records from 52 consecutive female partners of infertile couples who presented between January 2015 and December 2019. Fasting serum reproductive hormone profiles (FSH, LH, prolactin, progesterone, oestradiol, and testosterone) were assayed using Accubind ELISA Kits (Monobind Inc., Lake Forest, USA). Patients were classified by clinical and biochemical criteria. Data were analysed using SPSS Version 21 with Pearson correlation and independent-samples t-tests. **Results:** The mean age was 32.65 ± 5.21 years (range: 22–42). Primary and secondary infertility accounted for 42.3% and 57.7% of cases respectively. Of all subjects, 82.7% were normo-gonadotrophic, 53.8% were hyper-prolactinaemic, 36.5% had polycystic ovarian syndrome (PCOS), and 17.3% were hyper-gonadotrophic. No subject had hypo-gonadotrophism. The prevalence of PCOS was significantly higher than in comparable public-sector Nigerian data. **Conclusion:** Biochemical infertility is highly prevalent in this private hospital cohort, with hyper-prolactinaemia and PCOS as leading diagnoses. The prevalence pattern differs from public-sector counterparts, possibly reflecting socioeconomic and metabolic differences in the patient population. Routine biochemical fertility profiling should be integrated into early infertility evaluation in all clinical settings.

Keywords: Biochemical infertility; female infertility; polycystic ovarian syndrome; hyperprolactinaemia; private hospital; Abuja; Nigeria

ISSN 2720-765X

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

GACOPA MEDICAL JOURNAL
Official Journal of the Global Association of Clinical Officers and Physician Associates E-ISSN -2720-765X

ORIGINAL ARTICLE

1. Introduction

Infertility is defined by the World Health Organization (WHO) as the failure to achieve a clinical pregnancy after 12 months or more of regular, unprotected sexual intercourse in the absence of other causes such as breastfeeding or postpartum amenorrhoea.[1] Primary infertility describes couples who have never achieved a pregnancy; secondary infertility refers to the inability to conceive following a previous pregnancy, regardless of outcome.

Infertility is a global health problem affecting an estimated 60–80 million couples worldwide and more than 186 million individuals, the majority residing in developing countries.[2,3] It carries substantial socio-psychological, economic, and cultural consequences. In Nigeria and much of sub-Saharan Africa, where parenthood occupies a central role in marital and societal identity, infertility constitutes a serious social stigma and is a recognised cause of marital disharmony, depression, and financial distress.

Based on data from developed countries, female factors account for approximately 37% of infertility in couples, male factors for 8%, combined male-female factors for 35%, and unexplained causes for 5%.[4] The most common identifiable female factors include ovulatory disorders (25%), endometriosis (15%), pelvic adhesions (11%), tubal blockage (11%), other tubal abnormalities (11%), and hyperprolactinaemia (7%).[4] In developing countries, the burden of infertility is compounded by high rates of sexually transmitted infections, unsafe abortions, and limited access to specialist reproductive medicine.

Biochemical infertility — arising from hormonal and metabolic derangements — constitutes an important and largely treatable category within the female infertility spectrum. Despite this clinical importance, most Nigerian studies on biochemical infertility have been conducted in public tertiary hospitals.[8,10] Data from private hospital settings, which may serve a demographically and metabolically distinct population, are scarce. Differences in socioeconomic status, body mass index, dietary patterns, and health-seeking behaviour between patients at public and private facilities may produce differing biochemical infertility profiles.

This study aimed to establish the pattern and prevalence of biochemical abnormalities among female partners of infertile couples at Nizamiye Hospital, Abuja — a private tertiary facility — and to compare findings with those reported from Nigerian public health institutions.

2. Materials and Methods

2.1 Study Design and Setting

This was a retrospective, cross-sectional study conducted at the Obstetrics and Gynaecology Unit of Nizamiye Hospital, Abuja, a private tertiary hospital in Nigeria's Federal Capital Territory. Records of eligible female patients who presented between January 2015 and December 2019 were reviewed.

2.2 Ethical Approval

Ethical approval for this retrospective study was obtained from the Nizamiye Hospital Ethics and Research Committee (Approval Reference: NZH/HREC/2020/14). All patient data were anonymised prior to analysis, and no individually identifiable information is presented. The study was conducted in accordance with the principles of the Declaration of Helsinki.

2.3 Study Population and Eligibility

Eligible subjects were consecutive female partners of infertile couples who had undergone a biochemical fertility profile evaluation during the study period. Infertility was defined as failure to achieve pregnancy after at least 12 months of regular, unprotected sexual intercourse, consistent with WHO criteria.[1] A total of 52 female subjects met the eligibility criteria and formed the study cohort. These 52 subjects represented all eligible cases identified in the medical records during the study window.

Inclusion criteria: Female partners of couples diagnosed with infertility; age 18–45 years; available complete biochemical fertility profile records.

Exclusion criteria: Incomplete hormonal assay records; prior oophorectomy or known gonadal malignancy; current pregnancy; current hormonal therapy at the time of evaluation.

2.4 Clinical Classification

Subjects were classified into primary infertility (couple has never achieved a prior pregnancy) and secondary infertility (failure to conceive following at least one prior pregnancy). Biochemical categories were defined using the following standard criteria:

1. Normo-gonadotrophic: Serum FSH and LH within reference range, regular ovulatory cycles, no clinical/biochemical evidence of other endocrine disorder.
2. Hyper-prolactinaemic: Serum prolactin >25 ng/mL (women), confirmed on at least one fasting sample, with or without galactorrhoea.
3. Hyper-gonadotrophic: Serum FSH >10 mIU/mL with low oestradiol, consistent with premature ovarian insufficiency or diminished ovarian reserve.

ISSN 2720-765X

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

ORIGINAL ARTICLE

4. Polycystic Ovarian Syndrome (PCOS): Diagnosed by biochemical and/or clinical Rotterdam criteria (2003): oligo/anovulation, clinical or biochemical hyperandrogenism, and/or polycystic ovarian morphology — at least 2 of 3 criteria required.

Because these categories are not mutually exclusive (e.g., a patient with PCOS may concurrently be hyper-prolactinaemic), subjects could be assigned to more than one biochemical category. Prevalence figures therefore sum to more than 100%.

2.5 Laboratory Methods

Fasting blood samples were collected during the early follicular phase (days 2–5 of the menstrual cycle where applicable). Serum reproductive hormone profiles — including FSH, LH, prolactin, progesterone, oestradiol, and testosterone — were analysed using Accubind ELISA Kits (Monobind Inc., Lake Forest, CA, USA), performed according to manufacturer protocols. Reference ranges provided by the manufacturer were used as the basis for classification.

2.6 Statistical Analysis

Data were entered and analysed using the Statistical Package for the Social Sciences (SPSS) Version 21 (IBM Corp., Armonk, NY, USA). Continuous variables are presented as mean ± standard deviation (SD). The normal distribution of continuous variables was assessed using the Kolmogorov–Smirnov test. Independent-samples t-tests were used to compare means between primary and secondary infertility groups. Pearson correlation coefficients were calculated to assess relationships between age, duration of marriage, duration of infertility, and biochemical parameters. A p-value of <0.05 was considered statistically significant.

3. Results

3.1 Demographic and Anthropometric Characteristics

Fifty-two female partners of infertile couples were included. The mean age was 32.65 ± 5.21 years (range: 22–42). Twenty-two (42.3%) had primary infertility and 30 (57.7%) had secondary infertility. The mean ages of the two groups were not significantly different (32.09 ± 5.44 vs. 33.07 ± 5.10 years; p = 0.475). Mean weight (82.89 ± 15.45 kg) and mean BMI (32.07 ± 5.34 kg/m²) indicated that the cohort was, on average, overweight to class I obese. Full demographic and anthropometric data are shown in Table 1.

The mean duration of marriage was significantly longer in the secondary infertility group (9.87 ± 4.77 years) compared to the primary infertility group (4.27 ± 2.00 years; p < 0.001). The mean duration of infertility also differed significantly between groups (3.27 ± 2.00 vs. 5.07 ± 2.79 years; p = 0.023). These data are summarized in Table 2.

3.2 Biochemical Parameters

Mean ± SD values of all reproductive hormones for the 52 subjects are presented in Table 3. Notably, the mean prolactin level (30.28 ± 25.35 ng/mL) exceeded the upper limit of the normal reference range, and the wide standard deviations for FSH, prolactin, oestradiol, and testosterone reflect the heterogeneous clinical presentations within the cohort.

3.3 Classification of Biochemical Infertility

Of the 52 subjects, 43 (82.7%) were normo-gonadotrophic, 28 (53.8%) were hyper-prolactinaemic, 19 (36.5%) had PCOS, and 9 (17.3%) were hyper-gonadotrophic. No subject had hypo-gonadotrophism. As categories were not mutually exclusive, individual patients may appear in more than one category (Table 4). Hyper-prolactinaemia was equally distributed between primary (n=14, 50%) and secondary (n=14, 50%) infertility subgroups, while PCOS and hyper-gonadotrophism were proportionally more frequent in primary infertility patients.

3.4 Correlations Between Age and Biochemical Parameters

Across all 52 subjects, age correlated positively with FSH (r = 0.118, p = 0.046) and LH (r = 0.303, p = 0.029), and negatively with oestradiol (r = −0.400, p = 0.003). In the primary infertility subgroup, a significant positive correlation was observed between age and LH (r = 0.529, p = 0.011), and a significant negative correlation between age and oestradiol (r = −0.708, p < 0.001). No significant correlations were observed in the secondary infertility subgroup. Full results are presented in Table 5.

3.5 Correlations Between Marriage Duration and Biochemical Parameters

In the overall cohort, duration of marriage correlated negatively with LH (r = −0.274, p = 0.050) and LH:FSH ratio (r = −0.093, p = 0.050). In the primary infertility group, a significant negative correlation was found between marriage duration and oestradiol (r = −0.494, p = 0.019). These data are presented in Table 6.

3.6 Correlations Between Duration of Infertility and Biochemical Parameters

In the overall cohort, FSH correlated positively with duration of infertility (r = 0.446, p = 0.001), and oestradiol correlated negatively (r = −0.294, p = 0.034). In the secondary infertility subgroup, FSH

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

correlated positively (r = 0.642, p < 0.001), and progesterone correlated negatively (r = −0.394, p = 0.031) with infertility duration. Table 7 presents the complete correlation data.

4. Discussion

This study examined the biochemical profile of female infertility at a private hospital in Abuja, Nigeria — a setting that is underrepresented in the Nigerian literature. Infertility is a global health issue affecting 12–14% of couples worldwide and remains a major cause of psychological and social distress, particularly in sub-Saharan Africa.[2]

The mean age of 32.65 ± 5.21 years in this cohort is consistent with a similar study at the University of Ilorin Teaching Hospital, Ilorin, which reported mean ages of 32.9 ± 4.7 years (primary) and 34.4 ± 5.4 years (secondary).[8] This convergence across public and private settings suggests that age at presentation for infertility evaluation is similar regardless of hospital type in Nigeria.

The proportion of secondary infertility (57.7%) was higher than primary infertility (42.3%) in this study, consistent with the Ilorin Teaching Hospital study (65.6% secondary vs. 34.4% primary).[8] This contrasts sharply with a Moroccan study in which primary infertility constituted 77.2% of cases,[9] possibly reflecting a higher burden of post-infective tubal disease contributing to secondary infertility in sub-Saharan Africa.

The very high prevalence of normo-gonadotrophism (82.7%) in this study exceeds the 43.2% reported from the University of Ilorin Teaching Hospital's Assisted Reproductive Therapy (ART) Unit.[10] This discrepancy is not unexpected: patients referred to ART units typically represent a pre-selected group with confirmed, often complex infertility, whereas the present cohort encompasses all female partners presenting for initial biochemical evaluation, many of whom may have reversible or single-aetiology disease.

Hyper-prolactinaemia was observed in 53.8% of subjects — notably higher than the 9.1% reported from Ilorin[8] and the 25.2% from Morocco.[9] While measurement variability and assay differences may partly account for this, the high prevalence in this private cohort may also reflect elevated rates of PCOS (which is associated with mild hyperprolactinaemia), as well as the psychological stress associated with high-income infertility management. Stress-induced hyperprolactinaemia via dopaminergic pathway suppression is a recognised phenomenon.[11] The elevated mean BMI (32.07 kg/m²) further supports this — metabolic dysfunction, including insulin resistance and hyperinsulinaemia, has been implicated in both PCOS and dysregulation of hypothalamic-pituitary signalling.[11]

PCOS was diagnosed in 36.5% of subjects. This is higher than the 18.3% reported from Morocco[9] but closer to the 29.2% found among prospective oocyte donors at the Ilorin ART Unit.[10] The high PCOS prevalence in this study is consistent with the cohort's elevated BMI. Metabolic disorders including obesity, insulin resistance, and dyslipidaemia — common in women attending private health facilities in urban Nigeria — have been shown to impair oocyte quality and disrupt hypothalamic-pituitary-gonadal axis function.[11] Specifically, hyperinsulinaemia promotes androgen synthesis in theca cells, contributing to the pathogenesis of PCOS.

Hyper-gonadotrophism, consistent with premature ovarian insufficiency, was found in 17.3% of subjects — higher than the 8% from Côte d'Ivoire and 0.9% from Morocco.[9] This finding suggests that premature ovarian insufficiency may be a clinically underappreciated cause of infertility in this setting and warrants prospective evaluation.

The complete absence of hypo-gonadotrophism in this cohort is noteworthy and parallels the finding among prospective oocyte donors in Ilorin.[10] This may reflect the fact that hypo-gonadotrophism (as seen in hypothalamic amenorrhoea) is predominantly associated with low body weight, eating disorders, or extreme physical training — characteristics that are uncommon in an urban Nigerian private hospital population with a high mean BMI. The correlation between increasing age and rising FSH and LH with declining oestradiol, particularly in primary infertility patients, is consistent with the expected age-related decline in ovarian reserve. The positive correlation between FSH and duration of infertility in the secondary infertility group further supports the progressive nature of ovarian ageing as a contributor to prolonged infertility.

4.1 Limitations

This study has several important limitations. First, the sample size of 52 subjects over four years is small, limiting statistical power and the precision of prevalence estimates; findings should be interpreted with caution and may not be fully generalizable. Second, as a single-centre private hospital study, the cohort may not represent the broader Nigerian female infertile population. Third, the non-mutually exclusive categorization of biochemical conditions means that prevalence figures across categories exceed 100%, and the clinical primacy of individual diagnoses was not ranked. Fourth, ultrasound morphology for PCOS diagnosis was not systematically

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

documented, and classification relied primarily on biochemical criteria. Future prospective, multi-centre studies with larger sample sizes, standardized diagnostic criteria, and control groups are needed to characterize biochemical infertility in Nigerian private healthcare settings more rigorously.

5. Conclusion

Biochemical infertility is highly prevalent among female partners of infertile couples attending this private Nigerian hospital. Hyper-prolactinaemia (53.8%) and PCOS (36.5%) are the predominant diagnoses, followed by normo-gonadotrophism in the majority of subjects. The prevalence pattern differs quantitatively from comparable public-sector Nigerian data, likely reflecting the distinct metabolic and socioeconomic profile of patients in private healthcare settings. The complete absence of hypo-gonadotrophism is consistent with the cohort's elevated BMI. Because the leading biochemical causes of infertility identified in this study are treatable, routine biochemical fertility profiling should be integrated into early infertility evaluation across both public and private clinical settings in Nigeria.

Ethical Approval: This study was approved by the Nizamiye Hospital Ethics and Research Committee (Ref: NZH/HREC/2020/14). All data were anonymized and patient confidentiality was maintained throughout.

Author Contributions: AbdulAzeez I.M. and Biliaminu S.A. conceived and designed the study. Khan N. and Bakr M.R. contributed to clinical data collection. Oladosu W.O., Yusuff J.O., and Okesina A.B. performed data analysis and literature review. All authors contributed to manuscript preparation and approved the final version.

Funding: No external funding was received for this study.

Conflict of Interest: The authors declare no conflict of interest.

References

1. "WHO | Infertility." World Health Organization. Available from: http://www.who.int/reproductivehealth/topics/infertility/definitions/en/ [Accessed 17 June 2013].

2. Inhorn MC, Patrizio P. Infertility around the globe: new thinking on gender, reproductive technologies and global movements in the 21st century. Hum Reprod Update. 2015;21(4):411–426.

3. World Health Organization, Department of Reproductive Health and Research. Reproductive health indicators for global monitoring: report of the second interagency meeting. Geneva: WHO; 2001.

4. Unuane D, Tournaye H, Velkeniers B, Poppe K. Endocrine disorders and female infertility. Best Pract Res Clin Endocrinol Metab. 2011;25(6):861–873.

5. Habbema JD, Collins J, Leridon H, Evers JL, Lunenfeld B, te Velde ER. Towards less confusing terminology in reproductive medicine: a proposal. Hum Reprod. 2004;19(7):1497–1501.

6. Ombelet W, Cooke I, Dyer S, Serour G, Devroey P. Infertility and the provision of infertility medical services in developing countries. Hum Reprod Update. 2008;14(6):605–621.

7. World Health Organization. Infecundity, infertility, and childlessness in developing countries. DHS Comparative Reports No 9. Calverton, MD: ORC Macro and the World Health Organization; 2004.

8. Akande AA, Idowu AA, Jimoh AK. Biochemical infertility among females attending University of Ilorin Teaching Hospital, Nigeria. Niger J Clin Pract. 2009;12(1):20–24.

9. Benbella A, Aboulmakarim S, Hardizi H, Zaidouni A, Bezad R. Infertility in the Moroccan population: an etiological study in the reproductive health centre in Rabat. Pan Afr Med J. 2018;30:204.

10. Biliaminu SA, AbdulAzeez IM, Akande AA, Okesina AB, Olatinwo AWO, Omo-kanye LO. Biochemical infertility among prospective oocytes donors at the University of Ilorin Teaching Hospital Assisted Reproductive Unit, Nigeria. Trop J Health Sci. 2018;25(2):11–15.

11. Broughton DE, Moley KH. Obesity and female infertility: potential mediators of obesity's impact. Fertil Steril. 2017;107(4):840–847.

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

GACOPA MEDICAL JOURNAL
GACOPA Med J. 2 (1): 19-26 (2026) E-ISSN -2720-765X

ORIGINAL ARTICLE

Tables

Table 1. Mean ± SD of age and anthropometric parameters by infertility type

Parameter	All Subjects (N=52)	Primary Infertility (N=22)	Secondary Infertility (N=30)	p-value
Age (years)	32.65 ± 5.21	32.09 ± 5.44	33.07 ± 5.10	0.475
Weight (kg)	82.89 ± 15.45	77.02 ± 15.07	86.36 ± 15.30	0.018*
Height (m)	1.62 ± 0.07	1.60 ± 0.06	1.64 ± 0.07	0.084
BMI (kg/m²)	32.07 ± 5.34	31.20 ± 5.12	32.70 ± 5.49	0.476
Corpulence index (kg/m³)	19.83 ± 3.63	19.52 ± 3.54	19.63 ± 3.54	0.900

** Statistically significant (p < 0.05). BMI: body mass index.*

Table 2. Mean ± SD of age, marriage duration, and infertility duration by infertility type

Parameter	Primary Infertility (N=22)	Secondary Infertility (N=30)	p-value
Age (years)	32.09 ± 5.44	33.07 ± 5.10	0.475
Duration of marriage (years)	4.27 ± 2.00	9.87 ± 4.77	<0.001*
Duration of infertility (years)	3.27 ± 2.00	5.07 ± 2.79	0.023*

** Statistically significant (p < 0.05).*

Table 3. Mean ± SD of biochemical parameters in all 52 female partners

Biochemical Parameter	Mean ± SD
FSH (mIU/mL)	9.44 ± 12.58
LH (mIU/mL)	6.79 ± 4.77
LH:FSH ratio	1.23 ± 0.87
Prolactin (ng/mL)	30.28 ± 25.35
Progesterone (ng/mL)	3.81 ± 4.30
Oestradiol (pg/mL)	66.69 ± 68.72
Testosterone (ng/mL)	5.14 ± 7.57

FSH: follicle-stimulating hormone; LH: luteinising hormone.

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

GACOPA MEDICAL JOURNAL
GACOPA Med J. 2 (1): 19-26 (2026) E-ISSN -2720-765X

ORIGINAL ARTICLE

Table 4. Classification and frequencies of biochemical infertility (categories not mutually exclusive)

Category	Total N (%)	Primary Infertility n (%)	Secondary Infertility n (%)	p-value†
Normo-gonadotrophic	43 (82.7%)	16 (37.2%)	27 (62.8%)	0.221
Hyper-prolactinaemic	28 (53.8%)	14 (50.0%)	14 (50.0%)	1.000
Polycystic ovarian syndrome	19 (36.5%)	13 (68.4%)	6 (31.6%)	0.032*
Hyper-gonadotrophic	9 (17.3%)	6 (66.7%)	3 (33.3%)	0.148
Hypo-gonadotrophic	0 (0.0%)	0 (0.0%)	0 (0.0%)	—

*† Chi-square test comparing primary vs. secondary infertility. * Statistically significant (p < 0.05). Percentages within biochemical categories sum to more than 100% because individual patients may appear in multiple non-exclusive categories.*

Table 5. Pearson correlation between age and reproductive biochemical parameters

Parameter	All (r)	All (p)	Primary (r)	Primary (p)	Secondary (r)	Secondary (p)
FSH	0.118	0.046*	0.057	0.801	0.163	0.388
LH	0.303	0.029*	0.529	0.011*	0.226	0.229
LH:FSH	0.130	0.359	0.016	0.944	0.325	0.080
Prolactin	0.045	0.754	−0.210	0.927	0.104	0.584
Progesterone	−0.094	0.509	−0.122	0.590	−0.107	0.572
Oestradiol	−0.400	0.003*	−0.708	<0.001*	0.141	0.459
Testosterone	0.459	0.133	0.368	0.092	0.536	0.002*

** Statistically significant (p < 0.05). r: Pearson correlation coefficient.*

Table 6. Pearson correlation between duration of marriage and reproductive biochemical parameters

Parameter	All (r)	All (p)	Primary (r)	Primary (p)	Secondary (r)	Secondary (p)
FSH	0.137	0.334	0.020	0.928	0.244	0.194
LH	−0.274	0.050*	−0.183	0.416	0.141	0.458

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X

ORIGINAL ARTICLE

Parameter	All (r)	All (p)	Primary (r)	Primary (p)	Secondary (r)	Secondary (p)
LH:FSH	−0.093	0.050*	0.020	0.929	0.210	0.266
Prolactin	−0.123	0.384	−0.242	0.278	−0.046	0.810
Progesterone	−0.046	0.744	0.194	0.388	−0.274	0.144
Oestradiol	−0.312	0.024*	−0.494	0.019*	0.060	0.753
Testosterone	−0.241	0.451	0.158	0.481	0.359	0.051

** Statistically significant (p < 0.05).*

Table 7. Pearson correlation between duration of infertility and reproductive biochemical parameters

Parameter	All (r)	All (p)	Primary (r)	Primary (p)	Secondary (r)	Secondary (p)
FSH	0.446	0.001*	0.020	0.928	0.642	<0.001*
LH	−0.059	0.678	−0.183	0.416	0.274	0.142
LH:FSH	−0.007	0.963	0.020	0.929	0.074	0.699
Prolactin	−0.245	0.080	−0.242	0.278	−0.232	0.218
Progesterone	−0.196	0.164	0.194	0.388	−0.394	0.031*
Oestradiol	−0.294	0.034*	−0.494	0.158	−0.062	0.747
Testosterone	0.190	0.555	0.019	0.481	0.319	0.085

** Statistically significant (p < 0.05).*

Copyright © The Author (s). This is an Open Access Article under CC BY license
E- ISSN: 2720 – 765X