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The Trend of Infertility in a Tertiary Hospital in South-South Nigeria

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Abstract:

- ***Background:***

Infertility is a pervasive reproductive health challenge that significantly affects couples in Nigeria, with profound social, emotional, and economic implications. In South-South Nigeria, limited local data exist on the prevalence and etiological trends of infertility, underscoring the need for a focused evaluation in tertiary healthcare settings.

- ***Objective:***

This study aimed to determine the prevalence, identify the predominant causes, and assess the treatment modalities of infertility among patients at Rivers State University Teaching Hospital (RSUTH).

- ***Methods:***

A retrospective review of 192 patient records diagnosed with infertility was conducted over a three-year period at RSUTH. Data on demographics, infertility type (primary or secondary), duration, etiological factors, and treatment approaches were extracted from clinical records using a structured pro forma. Statistical analysis was performed using SPSS 21, with significance set at $p<0.05$.

- ***Results:***

The patient cohort ranged in age from 21 to over 45 years, with the highest prevalence observed among the 31–35 (34.9%) and 36–40 (31.8%) age groups. Secondary infertility was predominant (83.9%) compared to primary infertility (16.1%). Female factors were notably responsible for most cases, with hyperprolactinaemia (33.9%), tubal factors (13.0%), and anovulation (8.3%) emerging as the leading causes. Male factor infertility accounted for 7.3% of cases, while unexplained infertility was noted in 5.7%. Treatment interventions varied, with bromocriptine (25.0%) and assisted reproductive technology (19.8%) being the most frequently employed modalities.

- ***Conclusion:***

The study highlights a high prevalence of secondary infertility at RSUTH, predominantly driven by female etiologies, particularly hyperprolactinaemia. These findings reflect both the cultural importance of childbearing in Nigeria and the necessity for comprehensive, multidisciplinary reproductive health services. Further research is warranted to explore long-term outcomes and optimize treatment strategies for infertility in this region.

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Keywords: *Infertility; Hyperprolactinaemia; Secondary Infertility; Assisted Reproductive Technology*.

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I. INTRODUCTION

Infertility is a condition characterized by the inability to achieve a spontaneous conception after 12 months or more of regular unprotected penetrative sexual intercourse between a male and female1. It affects millions worldwide, with estimates suggesting that one in six individuals experience a form of infertility in their lifetime. In Africa, studies report that approximately 50% of Africans had either primary or secondary infertility, with as high as 41.6% in West Africa2. Infertility is regarded as the most significant reproductive concern among Nigerians, occurring in about 30% of couples3. Infertility is potentially severe, costly, and burdensome and holds a considerable stigma for families, especially in Nigerian society, where giving birth is regarded as the hallmark of parenthood3.

Various male and female factors cause infertility. In males, medical conditions such as varicoceles and chemotherapy result in failure to produce sperm cells. Using anabolic steroids leads to the production of poorly formed and dysfunctional sperm cells. Obstructive anomalies affecting the ejaculatory ducts and seminal vesicles lead to poor release of sperm necessary for fertilization. An imbalance of hormones that regulate sperm production and release, such as testosterone, as a result of testicular and pituitary cancers also contributes to male infertility1. Female factors are also responsible for approximately 50% of all cases of infertility, though this varies per population4. Disorders of ovulation, including oligo-ovulation and anovulation, account for 25% of identified causes of female infertility. Tubal blockage following poorly treated pelvic inflammatory disease, postpartum sepsis, septic incomplete abortions, and abdominopelvic surgeries is also a known cause of female infertility1,4. Uterine factors following congenital anomalies (such as septate uterus, bicornuate uterus, unicornuate uterus, Müllerian agenesis (Mayer-Rokitansky-Küster-Hauser Syndrome), uterine didelphys, and T-shaped Uterus}5, and inflammatory conditions (such as chronic endometritis, PID, Asherman's Syndrome (Intrauterine Adhesions), tuberculosis endometritis, endometriosis, and adenomyosis) are responsible for female infertility6,7. Sometimes, an interplay of both male and female factors increases the likelihood of coming down with female infertility. Therefore, a comprehensive approach that evaluates both male and female factors is essential for effective diagnosis and treatment of infertility, ensuring targeted interventions and improved reproductive outcomes.

The treatment of infertility hinges on addressing the underlying cause. The evaluation of infertility begins with semen analysis, followed by assessing ovarian function, uterine cavity, and fallopian tube patency, with endocrinological studies providing insights into hormonal imbalances. 4. Lifestyle modification, including weight loss and an increase in the frequency of sexual activity among couples, is also encouraged. Clomiphene citrate (first-line) and letrozole are used to treat infertility of unknown origin by controlled ovarian hyperstimulation. Gonadotropin therapy is beneficial as a second line following failure of conception after multiple failed clomiphene cycles and for anovulatory infertility. In vitro fertilization (IVF) is the primary treatment for bilateral tubal infertility, as tubal corrective surgeries have shown worse outcomes and increased risk of ectopic pregnancies.4. Treating male infertility depends on the underlying cause. It may involve medications to improve hormone levels, surgery to correct structural anomalies, or assisted reproductive technologies (ART) to enhance the chances of conception.

Studying infertility trends in healthcare settings is essential to better understanding the emotional, social, and financial effects on individuals and couples, particularly in South-South Nigeria. There is a need for comprehensive data on infertility trends at Rivers State University Teaching Hospital (RSUTH) due to limitations with local research. By addressing knowledge gaps around its prevalence, causes, and treatment options, this study hopes to ensure a better understanding of the condition in the region, shed light on the challenges people face, and contribute to better care and knowledge in the community. We aim to determine the prevalence of infertility in RSUTH, identify its major causes, and examine the effectiveness of various treatment patterns.

II. METHODS AND MATERIAL

This study was carried out at the Gynaecological Unit of the Rivers State University Teaching Hospital. An average of 880 gynaecological cases are seen annually in the gynaecological clinic. The RSUTH is the largest, as well as the only state-owned tertiary health facility in Rivers State. It is strategically located in Port Harcourt city at the old government reserved area (GRA). It provides all levels of health care services, including gynaecological services for Rivers and other neighboring states such as Bayelsa, Imo, Abia, Delta,, and Akwa Ibom States. The department runs five gynaecological and five obstetric clinics weekly, with obstetric and gynaecologic clinics run by separate teams daily. Each of the teams consults twice a week.

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There are at least four consultants in each of the teams.

This was a retrospective study of 192 patients' folders with one form of infertility or the other in the Rivers State University Teaching Hospital over a 3-year review. Ethical clearance was obtained from the ethical review board of the hospital. The data was retrieved from the gynaecological clinic records and case notes over the period under review and entered into a pro forma created for this purpose. Information obtained included age, parity, educational status, religion, occupation, types of infertility, causes of infertility, duration of infertility, and treatment options. The proforma for each patient was checked for completion before it was entered into a spreadsheet and analyzed using SPSS. 21. The results are represented in simple percentages, frequency tables, and figures. P-values <0.05 were considered statistically significant.

III. RESULTS

➢ *Prevalence and Demographics of Infertility*

A total of 192 cases of infertility were recorded in RSUTH during the study period (fig. 1). Patient's ages ranged from 21 to over 45 years, with the highest prevalence observed in the 31-35 years (34.9%) and 36-40 years (31.8%) age groups (figure 1). Most patients (59.9%) had never conceived, while 26.0% had one previous birth.

Regarding education, 49.0% had attained tertiary-level qualifications, while 5.7% had no formal education. Christianity was the predominant religion among participants (96.9%), with only 1.6% being Muslim or belonging to other religions [Table 1].

Business-related occupations were the most common (40.6%), followed by teaching (12.5%) and trading (8.3%). Civil servants, housewives, and students constituted a smaller fraction of the study population [Table 1].

➢ *Causes of Infertility*

The leading causes of infertility from our study were hyperprolactinaemia (33.9%), tubal factor infertility (13.0%), and anovulation (8.3%). Male factor infertility was responsible for 7.3%, while unexplained infertility accounted for 5.7% of cases. Uncommon causes included ovarian failure, polycystic ovarian syndrome (PCOS), and uterine factors [Table 2].

➢ *Types, Duration, and Treatment of Infertility*

Primary infertility accounted for 16.1% of cases, while 83.9% had secondary infertility [Table 3]. The duration of infertility varied widely, with the highest number of cases (23.4%) experiencing infertility for one year, followed by 18.8% for two years. Infertility cases of ten years and more were relatively rare (4.2%) [Table 4].

Various treatment approaches were utilized. Bromocriptine was the most administered modality (25.0%), followed by assisted reproductive technology (ART) at 19.8%. Ovulation induction was used in 8.9% of cases, while surgeries like myomectomy and adhesiolysis were utilized in a few cases. Urology consultation was sought in 6.3% of cases. Hormonal therapy, ovarian stimulation, and counseling were other modalities employed [Table 5].

IV. TABLES AND FIGURES

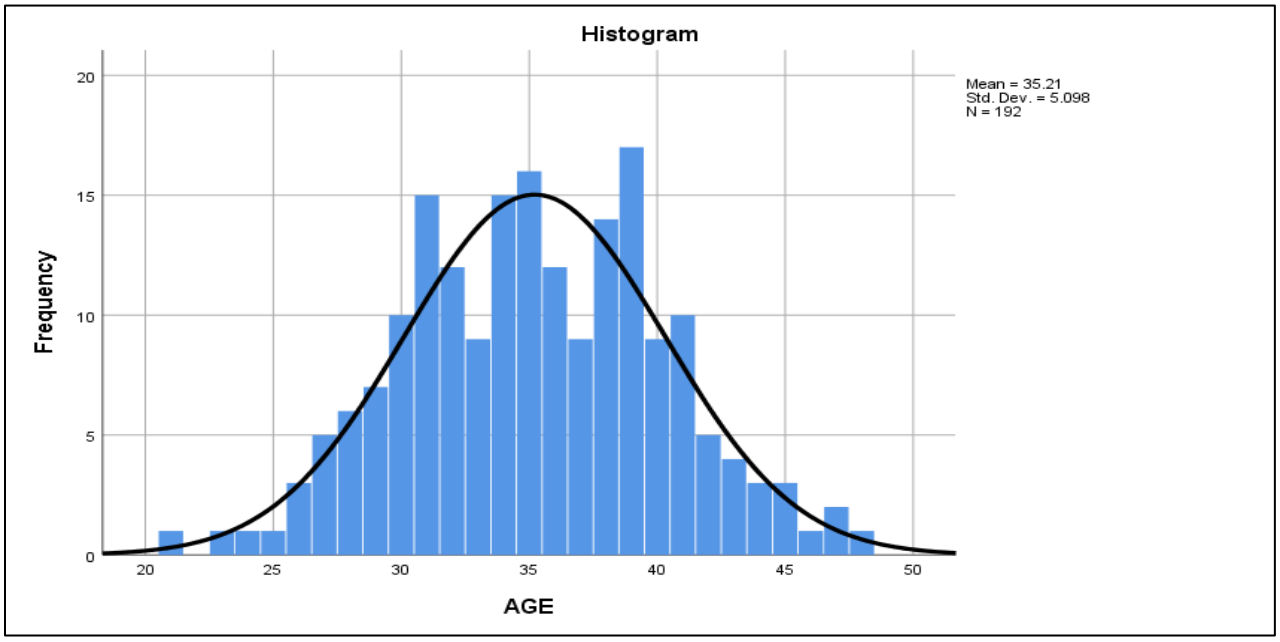

Fig 1: Trend of Infertility among Various Age Groups

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Table 1: Socio-Demographic Characteristics

Variable	Category	Frequency	Percentage
Age	21-25	4	2.1%
	26-30	31	16.1%
	31-35	67	34.9%
	36-40	61	31.8%
	41-45	25	13.0%
	>45	4	2.1%
Parity	0	115	59.9%
	1	50	26.0%
	2	20	10.4%
	3	7	3.6%
Education	No formal education	11	5.7%
	Primary	19	9.9%
	Secondary	68	35.4%
	Tertiary	94	49.0%
Religion	Christianity	186	96.9%
	Islam	3	1.6%
	Others	3	1.6%
Occupation	Business	78	40.6%
	Teaching	24	12.5%
	Trader	16	8.3%
	Civil Servant	13	6.8%
	Housewife	13	6.8%
	Student	6	3.1%
	Tailor/Seamstress	9	4.7%
	Public Servant	5	2.6%
	Hairstylist	5	2.6%
	Cleaner	3	1.6%
	Fashion Designer	4	2.1%
	Others (Accountant, Clergy, etc.)	18	9.4%
Total		192	100.0%

Table 2: Causes of Infertility

Cause	Frequency	Percentage
Hyperprolactinemia	65	33.9%
Tubal Factor	25	13.0%
Anovulation	16	8.3%
Male Factor	14	7.3%
Uterine Factor	13	6.8%
Unexplained	11	5.7%
PCOS	5	2.6%
Ovarian Factor	5	2.6%
Ovarian Failure	4	2.1%
Hyperprolactinemia + Anovulation	3	1.6%
Tubal Blockage	2	1.0%
Hyperprolactinemia + Male Factor	2	1.0%
Other Mixed Factors (e.g., Tubal + Uterine, Male + PCOS, etc.)	21	10.9%
Total	192	100.0%

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Table 3: Types of Infertility

Type	Frequency	Percent
Primary	31	16.1
Secondary	161	83.9
Total	192	100.0

Table 4: Duration of Infertility

Duration of infertility	Frequency	Percentage
1 year	45	23.4
2 years	36	18.8
3 years	25	13.0
4 years	21	10.9
5 years	15	7.8
6 years	10	5.2
7 years	5	2.6
8 years	2	1.0
9 years	7	3.6
10 years	8	4.2
12 years	2	1.0
13 years	1	0.5
14 years	2	1.0
N/I	13	6.8
Total	**192**	**100**

Table 5: Treatment of Infertility

Treatment/Intervention	Frequency	Percentage
Bromocriptine	48	25.0%
ART (Assisted Reproductive Technology)	38	19.8%
Induction	17	8.9%
Carbergoline	14	7.3%
Urologist Consultation	12	6.3%
Adhesiolysis	8	4.2%
N/I (Not Indicated)	8	4.2%
Clomid	7	3.6%
Stimulation	6	3.1%
Myomectomy	4	2.1%
Counselling	3	1.6%
Surgery	3	1.6%
Hormonal Drugs	1	0.5%
Supplement	1	0.5%
COC (Combined Oral Contraceptive)	1	0.5%
Other (e.g., ART + Myomectomy, Bromocriptine + Clomid, Induction + Urologist, etc.)	26	13.5%
Total	192	100.0%

V. DISCUSSION

Infertility, according to the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology, is a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. Infertility can be further classified into primary infertility, in which no previous pregnancies have occurred, and secondary infertility, in which prior pregnancy, although not necessarily a live birth, has occurred. One of the greatest desires of couples is successful reproduction, especially in the developing countries.

The prevalence of infertility from this study is 21.82%, which is similar to what Dattijo et al. found in Bauchi, Northern Nigeria (23.9%). 10. Primary infertility accounted

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for 16.1% of cases, while 83.9% had secondary infertility. This finding is similar to, though lower than, the reported figure from Northern Nigeria, where primary infertility accounted for 31.9% and secondary infertility accounted for 68.1%. 10. It is also similar to the 62.9% from Tanzania in East Africa, but lower than 80% from lagos9,11. This difference may be due to variation in health-seeking behavour among our people.

The age range with the highest prevalence is 31-35 years (34.9%), followed by 36-40 years (31.8%). This finding shows some similarity with a study done in Bauchi, where the mean age was 30.5 ± 5 years, but less than the finding in Lagos of 33.8 years [9, 10]. The peak age of incidence is similar to the finding in Southeast Nigeria (age 30-39 years)12.

The leading causes of infertility as revealed by this study were hyperprolactinaemia (33.9%), tubal factor infertility (13.0%), and anovulation (8.3%). These three major causes are all female factors, and this is in keeping with other studies [9, 13, 14]. Male factor infertility was responsible for 7.3%; other mixed factors (tubal, uterine, male, and PCOS, etc.) accounted for 10.9%, while a combination of male and female factors accounted for 54.2% of cases of infertility. This is, however, different from the study done in Lagos, where a combination of male and female factors accounted for 40% of cases. It is also different from another study done in the southern part of the country, where female factors alone accounted for 51.8% of cases, male factors only, 26.8%, and both partners 21.4%. 9, 1.

Forty-five of the total population studied have one year duration of infertility, which accounted for 23.4% of cases; 18.8% of cases have two years of infertility, and 13% of cases have three years of infertility, but there are reported cases of over 10-14 years of infertility. This median duration of infertility of 1 year found in this study is less than the 4 to 5 years duration reported in Lagos, Bauchi, and Sokoto9,10,16. This early presentation could be accounted for by the educational status of most of the participants; 49% of cases have tertiary education and 35.4% have secondary education. The early presentation may also be explained by the premium placed on childbirth in Nigeria12,17.

There are various treatment options for infertility, and the treatment is dependent on the age of the couple, the cause of the infertility, and the available facility. The various treatments offered in this study were bromocriptine (25%), assisted reproductive technology (ART) (19.8%), and ovulation induction was used in 8.9% of cases.

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