

Profile of Infertile Couples in an Urban Setting in southern Ghana, West Africa

Joycelyn Adjei-Mensah, Sebastian Derick Taylor, Bill Kwaku Koduah Bofo, Emmanuella Thompson, Maame Abena Wiredua Ayim, Diallo Abdoul Azize*

Department of Obstetrics and Gynaecology, School of Medical Sciences, University of Cape Coast, Cape Coast, Ghana

Email: *diallo.azize@uccsms.edu.gh

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Abstract

Objective: The purpose of this study is to identify the profile of infertile couples in an urban general hospital in southern Ghana and determine the infertility causes. **Method:** A cross-sectional hospital-based study with a retrospective data collection was carried out at the Obstetrics and Gynaecology unit of the University of Cape Coast Hospital, which serves as a general hospital in Cape Coast, between January 2018 and December 2019 to assess the profile and causes of infertility among couples seeking fertility treatment. A data extraction tool was used to collect secondary data from the hospital patients' records. **Results:** The data of 103 couples were collected over a 24 months period. The mean age of the Female and Male respondents were 35.51 years and 37.45 years, respectively with a standard deviation of 5.55 to 5.20, respectively. Most (83.5%) of the couples were married and Urban residence was the most common, 69.9%. All the females' respondents never smoked and neither consumed alcohol. Among the male counterpart, 16.5% had smoked in the past or were smoking currently and 63.10% of the males drink alcohol currently. Sexual intercourse was currently inadequate among 63.10% of the couples. The prevalence of infertility in the study population was 15.3%. More than half of the couples (53.4%) had primary infertility and anovulatory causes were present in 41.7% of the causes. **Conclusion:** Infertile couples in this setting are in their mid to late thirties, living in urban areas, almost all are married, majority working as traders or self-employed. Specifically, the women are nonsmokers and don't drink alcohol while more than half of the men drink alcohol. Most of the women are overweight or obese. Primary infertility and anovulatory causes were the most common.

Keywords

Infertility, Profile, Couples, Cape Coast, Ghana

1. Introduction

In the 21st century, infertility has been defined according to the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO), as “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 [1]. Infertility is a global burden with significant social consequences [2] [3].

Worldwide, an estimated one million of both men and women are infertile, with figures about 55,000,818 and 110,089,459 respectively for men and women [3]. About 10 to 15% of couples in their reproductive age are infertile [4] [5]. Male factors seem to be the commonest, about 30 % of cases, followed by tubal factors [4] [5]. Globally Primary infertility was the commonest and the age range the most affected was 35 - 39 years [3].

In developing countries, one in every four couples are infertile [5]. In Sub-Saharan Africa, the infertility rate may approach 30% [5]. The Causes of infertility may arise from male factors or female factors and sometimes combined. Male factor of infertility is said to be about 20 - 40% among couples in Sub-Saharan Africa [1].

In Ghana, the prevalence of infertility is estimated at 11.8% among women and 15.8% among men [6] [7]. Similarly, a study conducted among 110 patients who reported infertility at the urology clinic of the 2nd largest Teaching Hospital revealed that, 58.2% had primary infertility while the remaining 41.8% had secondary infertility.

In our setting, there is some handful amount of data on the prevalence of infertility and various causes, however there is no study who dived into the profile of infertile couples so that targeted interventions could be applied, thus the rationale of this study.

2. Methodology

2.1. Method

A retrospective, cross sectional hospital-based study over a two years period between January 2018 and December 2019 was carried out at the University of Cape Coast Hospital (UCCH), a level C general hospital to assess the profile of infertile couples using a data extraction tool to retrieve secondary data from the patient records.

2.2. Study Area

The UCCH where the study was conducted is located in the Cape Coast metropolis which is the capital of the Central Region in Southern Ghana. The Central region has a population of 2,859,821 inhabitant, with a female population representing 51.4%.

2.3. Study Population

The population of this study included all couples who had visited the Gynaecological clinic of the UCCH during the study period.

Inclusion and exclusion criteria

Inclusion Criteria

All couples who attended the gynaecology clinic during the study period to seek fertility treatment.

Exclusion Criteria

All couples with incomplete data.

2.4. Sampling Technique

Census was carried out to include all infertile couples, who reported at the hospital during the study period.

2.5. Data Collection Instrument

- A structured pre designed data extraction tool was used in data collection. The data extraction tool comprised items to collect: socio-demographic, lifestyle information, medical and obstetric data.

2.6. Diagnostics Criteria

- Male factor infertility is defined by an abnormal semen analysis results values with reference to the 7th Edition of the World Health Organization's manual for human semen analysis.
- Anovulatory causes correspond to all cases with Polycystic Ovarian Syndrome (diagnosed per the Rotterdam criteria) and when all cases where Day 21 progesterone level is less than 30 nmol/L).
- Uterine factor causes are defined as all cases with ultrasound scan documented uterine myomas (at the least type2 FIGO classification) or endometrial polyps or diffuse adenomyosis.
- Tubal factor infertility is defined as documented bilateral tubal blockage on laparoscopy and dye test evaluation alone or following an Hystero-salpingography assessment.
- Unexplained infertility is defined as all couple who are infertile despite one year of adequate sexual intercourse in whom the fertility evaluation did not find any identifiable cause.
- Adequacy of sexual intercourse: Having sexual intercourse every 2 - 3 days during the menstrual cycle.

2.7. Data Analysis

The data was entered and analyzed using Statistical Package for Social Sciences (SPSS version 24) and Graphs and tables were drawn with Microsoft Excel 2016. Continuous data was analysed descriptively through standard deviations and means. Categorical data were expressed in frequencies and percentages.

2.8. Ethical Consideration

This study was approved by the University OF Cape Coast's Institutional Review Board, with IRB approval ID: UCCIRB/CHAS/2019/148. The data was anonymized.

3. Results

3.1. Socio-Demographics

The total number of respondents (couples) who consulted for sub-fertility during the study period was 125, out of which 22 had incomplete data and they were excluded from the analysis. At the end in 103 couples were studied, which provided a response rate of 82.4%.

The mean age of the Female and Male respondents were 35.51 years and 37.45 years respectively with a standard deviation of 5.55 to 5.20 respectively. The extremes of age for the female respondents were 23 and 48 years while that of the male respondents were 31 and 52 years.

Most (83.5%) of the couples were married and 99% of them practice were Christianity as religion and the remaining 1% were Muslims. Urban residence was the commonest, 69.9%, followed by peri-urban, 21.4% and rural, 8.7%. Considering occupation, majority of the female respondents (55.3%) were Traders who owned their private businesses, 36% employed (public servant or private), 7.7% students; while majority of the male respondents (45.4%) were self-employed, 25.2% drivers, 24.0% public servant and 5.4% were teachers. The results are summarized below in **Table 1**.

Table 1. Socio-demographics of the couples. (*N* = 103)

Characteristics	Categories	Frequency (n)	Percentage (%)
Age range	Female		
	20 - 24	1	1.0
	25 - 29	14	13.6
	30 - 34	32	31.1
	35 - 39	30	29.1
	40 - 45	23	22.3
	46 - 49	3	2.9
	Male		
	30 - 34	34	33.0
	35 - 39	29	28.2
	40 - 45	28	27.2
Place of residence	46 - 49	8	7.8
	>50	3	2.9
	Urban	-	69.9%
Marital status	Peri-urban	-	21.4%
	Rural	-	8.7%
	Married	86	83.5
Religion	Single	17	16.5
	Christian	102	99
	Muslim	1	1

3.2. Alcohol Intake and Smoking

All the females' respondents never smoked and neither consumed alcohol. Among the male counterpart, 17 (16.5%) had smoked in the past or were smoking currently, while 86 (83.49%) had never smoked before. Also 65 (63.10%) of the males drink alcohol currently. Because of the type of study design, units of alcohol intake per day and packs of cigarettes smoked per day could not be assessed since they were not readily documented in the patients' records.

3.3. Current Frequency of Sexual Intercourse

Among the respondents, Inadequate sexual intercourse was found in 65 (63.10%) and majority of the couples (59.2%) were having one sexual intercourse in a week.

3.4. Obstetrical Characteristics

More than half of the respondents (64.1%) were Nulliparous, thus having primary infertility and 14.5% of the respondents had between 2 - 3 children. The findings on parity are summarized in **Table 2**.

Table 2. Parity of the female respondents.

Parity	Frequency (n = 103)	Percentage (100)
0	66	64.1
1	22	21.4
2	13	12.6
3	2	1.9
Total	103	100

3.5. Prevalence of Obesity among the Female Respondents

The prevalence of overweight and obesity among the infertile patients were 30% (31/103) and 44.6% (46/103) and both overweight and obesity accounted for 74.6%.

3.6. Prevalence and Type of Infertility

The total number of consultations at the gynecology clinic of the UCCH during the study period was 672, and 103 were diagnosed with infertility, thus the prevalence of infertility of 15.3% (103/672). More than half of the respondents 55 (53.4%) had primary infertility. Primary infertility was common within the age group of 30-34 years while secondary infertility in the age range of 35 - 39 years.

3.7. Duration of the Infertility

The mean number of years the couples have been attempting to get pregnant was 5 years, with a minimum of one year and a maximum number of 17 years. The highest percentage of the couples (17.5%) have been infertile within 1 year duration. The findings on the duration of infertility are summarized in **Table 3**.

Table 3. Duration of infertility.

Years	Frequency (n = 103)	Percentage (100)
1 - 4	53	51.45
5 - 9	29	28.15
10 - 14	16	15.53
15 - 17	5	4.85
Total	103	100.0

3.8. Causes of the Infertility

Female factors were contributory causes in 74 couples (71.8%) in which ovulatory, uterine and tubal factors contributed 41.7%, 11.6% and 18.5% respectively. Male factor was a contributory cause in 19 couples (18.5%). Unexplained causes were present in 24 couples (23.3%). A combination of male and female factors was found in 14 couples (13.6%).

4. Discussion

The total number of participants were 103 which were obtained from hospital records within the two year period of study (January 2018 - December 2019).

4.1. Socio-Demographic Characteristics

Both male and female participants were between the ages of 31 - 49 years and 23 to 48 years respectively, with a mean age of 37 years for male and 35 years for female respondents, reflecting a population in its reproductive age (15 - 49 years). This finding is consistent with studies conducted in Ghana and Europe [6] [8] [9], which shows similar age ranges among infertile male and women.

For the marital status, almost all couples were married which reflects the reality in this setting where childbirth is commonly the main purpose of marriage [10], thus infertility will be more common among married couples.

Majority of the couple were practicing Christianity, this is the reflection of the Ghanaian population where 71.3% of the population are Christian [11].

4.2. Alcohol Intake and Smoking

All the females' respondents never smoked and neither consumed alcohol. Among the male counterparts 17 (16.5%) had smoked in the past or smoking currently. Also 65 (63.10%) of the males drink alcohol currently, similarly within Ghana data suggest that smoking is almost absent among women, with only 0.3% of females in the general population and 8.9% among male [12] [13]. In the same line alcohol intake in Ghana is very prevalent among male, with more than half consuming alcohol [14] [15]. These lifestyles among the male respondents could contribute or worsen their fertility potential in negatively affecting their semen parameters [16].

4.3. Current Frequency of Sexual Intercourse

Most couples (63.10%) were currently having inadequate sexual intercourse as recommended to optimize the chances of conception. This could be explained by

either the ignorance about adequate sex for conception [17] or by sexual disorders as a result of infertility leading to avoidance [18] [19].

4.4. Prevalence and Causes of Infertility

The prevalence of infertility in this study was 15.3%. This is comparable to the finding from a similar study conducted in the middle belt of Ghana where the prevalence was 13.8% [6] and another one in the same region who found 12.3% [20].

Primary infertility was the commonest among the respondents, with a prevalence of 6.3% (53.4% of the infertile couples). Similar trends were found in United Kingdom [21] and in other African countries [22].

Female factors contributed most to the cause of infertility (71.8% of the couples) with anovulation being the leading cause in 41.7% of the couples. These findings are similar to a survey in Sudan [23] but contrary to many studies who revealed that male contribution was the highest [24] [25].

This high contribution of the female factor, mostly due to unovulatory causes, could be explained by the significant number of overweight and obese women among the respondents with prevalence of 30% and 43.3% % respectively. Excess body fat (overweight and obesity) is known to disrupt menstrual cycles and ovulation [26] [27].

5. Conclusion

Infertile couples in this setting are in their mid to late thirties, living in urban areas, almost all are married, working in the informal sector. Specifically, the women are nonsmokers and don't drink alcohol, while more than half of the men drink alcohol. Most of the women are overweight or obese. Primary infertility and unovulatory causes were the commonest.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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