Background. The inability of couples to achieve pregnancy is a major cause of psycho-social problems in family relationship that could lead to marital disharmony.

Objective. The aim of this study was to find out the possible risk factors for female infertility.

Methods. A case-control design and a sample size of 400 (200 cases of infertility and 200 controls) were used in the study. Cases and controls were selected at random at the infertility and family planning clinic of the University of Medical Sciences Teaching Hospital Complex, Akure and were subjected to a predesigned interviewer administered questionnaire to collect the data. The cases were classified into primary and secondary infertility; binary and stepwise logistic regressions were used to generate the Odds ratio and 95% confidence interval of the possible risk factors and the level of significance was set at $P<0.05$.

Results. The mean age of the women with infertility was 28.5±5.43 years and the mean age of those in the control group was 29.1±5.62 years. Among the cases, 155 (77.5%) had secondary infertility, while 45 (22.5%) had primary infertility. Significant risk factors for female infertility included presence of fibroids, having had fibroid operation, multiple sexual partners, previous abortion, polycystic ovary syndrome (PCOS), sexually transmitted infection (STI) and post abortion sepsis.

Conclusion. The study showed that secondary infertility is still the most prevalent and the risk factors were multi factorial. Efforts should be intensified to reduce infertility due to preventable causes.

KEY WORDS: female infertility; risk factors; fibroids; polycystic ovary syndrome; sexually transmitted infection.

Introduction
Infertility is the inability of a couple to achieve pregnancy over an average period of one year despite adequate, regular unprotected sexual intercourse [1]. WHO in 1991 estimated that between 8 and 12% of couples experienced some form of infertility during their reproductive lives, thus affecting 50 to 80 million worldwide, out of which 20-35 million couples in Africa expected to experience this problem [2]. This can be extrapolated to 3-4 million Nigeria couples suffering from infertility [3]. According to Oggunniyi in 1995, the prevalence of infertility in Sub-Saharan Africa was reported as ranging between 20-60% [4]. However, the estimate of infertile couples in Ile-Ife has been put at 19% by Okonofua in 1995 [5], although authors in previous studies in the other parts of Nigeria presented different ranging estimates.

Causes of infertility could be due to female factors, male factors or both. Estimates show that in 35-40% of cases a man is infertile and in 35-40% of cases a woman is infertile while in 20-30% of cases, it is related to the combination of other factors [6]. Causes of female infertility include conditions that may damage the fallopian tubes, interfere with ovulation or cause hormonal imbalance [7]. These conditions include pelvic inflammatory disease resulting from sexually transmitted infections, endometriosis, polycystic ovarian syndrome, premature ovarian failure, uterine fibroids and environmental factors [7]. Other causes of infertility in females include post abortion sepsis, puerperal sepsis and age-related factors [8]. The risk factors for infertility can therefore be classified into: genital, endocrinal, developmental and general factors [9].

Infertility can be primary, if a woman has never conceived before, or it can be secondary, if a woman has at least once conceived but may or may not have carried the pregnancy to term [10]. In resource-rich countries primary infer-
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Inclusion criteria: controls and those who did not give consent. Exclusion criteria: Women who had medications or surgery to induce pregnancy among the same hospital that gave their consent to participate in the study. Informed consent was obtained through a weekly visit till the required sample size was obtained. Controls involved fertile history such as age of menarche, regularity of menses, family history of infertility; relevant demographic data such as age, occupation, educational level, age at marriage; menstrual history such as age of menarche, regularity of menses, family history of infertility; relevant medical history such as diabetes mellitus, thyroid diseases, hypertension were also assessed; surgical history such as abdominal/pelvic surgeries were obtained. Information on probable gynaecological conditions that could cause infertility such as history of endometriosis, polycystic ovarian syndrome, presence of fibroids, sexually transmitted infections, genital infection following childbirth and previous abortion were obtained. The cases were classified into primary or secondary infertility.

Methods

Study design

The study used a matched case control design and was conducted at the infertility clinic of the University of Medical Sciences Teaching Hospital Complex, Akure, Ondo State, Nigeria, and family planning clinic of the same hospital. The cases and controls were subjected to a predesigned interviewer administered questionnaire to collect socio-demographic data such as age, occupation, educational level, age at marriage; menstrual history such as age of menarche, regularity of menses, family history of infertility; relevant medical history such as diabetes mellitus, thyroid diseases, hypertension were also assessed; surgical history such as abdominal/pelvic surgeries were obtained. Information on probable gynaecological conditions that could cause infertility such as history of endometriosis, polycystic ovarian syndrome, presence of fibroids, sexually transmitted infections, genital infection following childbirth and previous abortion were obtained. The cases were classified into primary or secondary infertility.

Statistical Analysis

The collected data were analysed using the computer package SPSS version 23. Descriptive tables were generated and binary logistic regression was used to generate the Odds ratio and the 95% confidence interval of the possible risk factors for infertility. These factors were further subjected to analysis using a stepwise logistic regression to identify the main predictors of female infertility. The statistical significance was set at p<0.05.

Results

During the study, 200 cases of female infertility were registered and 200 age-matched controls. The mean age of the women with infertility was 28.5±5.43 years old and the mean age of those in the control group was 29.1±5.62 years old. Among the cases, 155 (77.5%) pa-
Patients suffered from secondary infertility, while 45 (22.5%) had primary infertility. The mean ages of those with secondary and primary infertility were 28.7±4.4 years old and 29.1±3.4 years old respectively. As presented in Table 1, 96 (61.9%) cases of secondary infertility and 70 (45.2%) of their control were traders, the risk of secondary infertility was statistically significantly higher among the traders compared to their controls [OR=0.17, 95% CI=0.06-0.48, p=0.001]. Meanwhile, there was no statistically significant difference between the occupation of those with primary infertility and their control. The majority of the subjects practiced Christian religion, were married and had tertiary level of education with no statistically significant difference (p>0.05) in both groups.

Table 2 showed the distribution of female infertility and the controls according to their gynaecological history.

Most of the women in both groups were already married at the age of over 18 years old. Among those with secondary infertility, 94 (60.6%) had no living children but had abortions/miscarriages in the past compare to their controls, where 92 (59.4%) already had ≥3 children, this was statistically significant, p=0.000. Similarly, the 45 (100%) of those with primary infertility have never been pregnant compare to their controls, where 31 (68.9%) had ≥3 living children. This was also statistically significant, p=0.000. Among those with secondary infertility, 31 (20.0%) had more than one sexual partner compare to 4 (2.6%) of the control, while 7 (15.6%) of those with primary infertility and 0 (0%) of the control had more than one sexual partner; this was also statistically significant, P=0.000. Among the cases, 91 (58.7%) of those with secondary infertility started their menses after the age of 15 years compare to 88 (56.8%) of their control, delayed menses was not a significant risk factor for infertility [OR=0.92, CI=0.59-1.45, p=0.730]. Only 10 (6.5%) of the cases of secondary infertility and 3 (6.7%) of their control reported family history of infertility, this was not a significant risk factor for infertility [OR=0.89, CI=0.35-2.26, p=0.813].

The analysis of cases of female infertility and the control according to the medical or surgical history showed that none of the subjects have ever had diabetes, thyroid disease or tuberculosis. Though, 10 (6.5%) of the cases of secondary infertility and 7 (4.5%) of their control reported to have had hypertension while 3 (6.7%) of the cases of primary infertility and none of their control reported to

Table 1. Socio-demographic characteristics of cases of female infertility and control subjects

| Demographic factors | 2° infertility cases (n=155) No (%) | Control (n=155) No (%) | OR (95% CI) | P value | 1° infertility cases (n=45) No (%) | Control (n=45) No (%) | OR (95% CI) | P value |
|---------------------|-----------------------------------|------------------------|-------------|---------|-----------------------------------|------------------------|-------------|---------|
| Age                 | 15-24                             | 78 (50.3)              | 3 (1.9)     | 0.203   | 2 (4.4)                           | 26 (57.8)              | 1 (2.2)     | 0.34    |
|                     | 25-34                             | 37 (23.9)              | 73 (47.1)   |          | 26 (57.8)                         | 17 (37.8)              | 19 (42.2)   | 0.49    |
|                     | ≥35                               | 40 (25.8)              | 79 (51.0)   |          | 17 (37.8)                         | 25 (55.6)              |             | 0.229   |
| Occupation          | Civil/public servants             | 54 (34.8)              | 64 (41.3)   | 0.28    | (0.10-0.79)                       | 15 (33.3)              | 22 (48.9)   | 0.177   |
|                     | Trading/business                  | 96 (61.9)              | 70 (45.2)   | 0.17    | (0.06-0.48)                       | 26 (57.8)              | 22 (48.9)   |         |
|                     | Housewives/applicants®            | 5 (3.2)                | 21 (13.5)   |          | 4 (8.9)                           | 1 (2.2)                |             |         |
| Religion            | Christian                        | 148 (95.5)             | 147 (94.8)  | 0.86    | (0.31-2.45)                       | 44 (97.8)              | 42 (93.3)   | 0.32    |
|                     | Islam                             | 7 (4.5)                | 8 (5.2)     |          | 1 (2.2)                           | 3 (6.7)                |             | 0.306   |
| Marital status      | Single                            | 3 (1.9)                | 1 (0.6)     | 0.3 3   | (0.03-3.19)                       | 0 (0.0)                | 2 (4.4)     |        |
|                     | Married                           | 152 (98.1)             | 154 (99.4)  |          | 45 (100)                          | 43 (95.6)              |             | 0.153   |
| Educational level   | Primary                          | 13 (8.4)               | 7 (4.5)     | 0.47    | (0.18-1.23)                       | 3 (6.7)                | 2 (4.4)     | 0.887   |
|                     | Secondary                         | 46 (29.7)              | 38 (24.5)   | 0.72    | (0.43-1.20)                       | 12 (26.7)              | 13 (28.9)   |         |
|                     | Tertiary®                         | 96 (61.9)              | 110 (71.0)  | Reference | 30 (66.7)                         | 30 (66.7)              |             |         |

® = reference category
have had hypertension, this was not statistically significant [OR=0.69, CI=0.25-1.85, P=0.454]. However, 15 (9.7%) of secondary infertility cases have had fibroid operation compare with 1 (0.6%) of the control and the risk of secondary infertility was significantly higher than the control [OR=0.06, 95% CI=0.01-0.47, P=0.007]. Also, 5 (11.1%) of those with primary infertility and none of the control have had fibroid operation, the risk of primary infertility was significantly higher than the control, P=0.021 (Table 3).

Table 2. Distribution of cases of female infertility and controls according to their gynaecological history

| Factors                  | 2o infertility cases (n=155) No (%) | Control (n=155) No (%) | OR (95%CI) | P value | 1o infertility cases (n=45) No (%) | Control (n=45) No (%) | OR (95%CI) | P value |
|--------------------------|------------------------------------|------------------------|------------|---------|------------------------------------|------------------------|------------|---------|
| Age at marriage          |                                    |                        |            |         |                                    |                        |            |         |
| <18                      | 2(1.3)                             | 0(0.0)                 | -          | 0.132   | 0(0.0)                            | 45(100)                | 1(2.2)     | 0.360   |
| ≥18                      | 151(97.4)                          | 155(100)               | -          |         | 15(9.7)                           | 140(90.3)              | 15(9.7)    | 0.021   |
| None                     | 2(1.3)                             | 0(0.0)                 | -          | 0.000   | 0(0.0)                            | 45(100)                | 0(0.0)     | 0.000   |
| Parity                   |                                    |                        |            |         |                                    |                        |            |         |
| 1                        | 46(29.7)                           | 20(12.9)               | 0.92       | 0.730   | 0(0.0)                            | 23(51.1)               | 2(4.4)     | 0.000   |
| 2                        | 13(8.4)                            | 43(27.7)               |           |         | 0(0.0)                            | 12(26.7)               | 2(4.4)     | 0.000   |
| ≥3                       | 2(1.3)                             | 92(59.4)               |           |         | 0(0.0)                            | 31(68.9)               | 0(0.0)     | 0.000   |
| None                     | 94(60.6)                           | 0(0.0)                 | -          |         | 0(0.0)                            | 45(100)                | 0(0.0)     | 0.000   |
| Age at 1st menses        |                                    |                        |            |         |                                    |                        |            |         |
| <15                      | 64(41.3)                           | 67(43.2)               | 0.89       | 0.813   | 3(6.7)                            | 28(62.2)               | 0(0.0)     | 0.078   |
| ≥15                      | 91(58.7)                           | 88(56.8)               |           |         | 42(93.3)                           |                        | 45(100.0)  | 0.000   |
| Family history of infertility |                                    |                        |            |         |                                    |                        |            |         |
| Yes                      | 10(6.5)                            | 9(5.8)                 | 0.35       | 0.000   | 0(0.0)                            | 24(44)                 | 0(0.0)     | 0.000   |
| No                       | 145(93.5)                          | 146(94.2)              |           |         | 42(93.3)                           |                        | 45(100.0)  | 0.000   |
| No sexual partner        |                                    |                        |            |         |                                    |                        |            |         |
| 1                        | 124(80.0)                          | 151(97.4)              | 9.43      | 0.000   | 38(84.4)                          | 45(100.0)              | 0(0.0)     | 0.000   |
| >1                       | 31(20.0)                           | 4(2.6)                 |           |         | 7(15.6)                           |                        | 45(100.0)  | 0.000   |

Table 3. Distribution of cases of female infertility with controls according to their medical/surgical history

| Medical conditions     | 2o infertility cases (n=155) No (%) | Control (n=155) No (%) | OR (95%CI) | P value | 1o infertility cases (n=45) No (%) | Control (n=45) No (%) | OR (95%CI) | P value |
|------------------------|------------------------------------|------------------------|------------|---------|------------------------------------|------------------------|------------|---------|
| Diabetes               |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | 0(0.0)                             | 0(0.0)                 | -          | -       | 0(0.0)                            | 45(100)                | 0(0.0)     | -       |
| No                     | 155(100)                           | 155(100)               | -          | -       | 0(0.0)                            | 45(100)                | 0(0.0)     | -       |
| Hypertension           |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | 10(6.5)                            | 7(4.5)                 | 0.69       | 0.454   | 3(6.7)                            | 42(93.3)               | 0(0.0)     | 0.078   |
| No                     | 145(93.5)                          | 148(95.5)              |           |         | 42(93.3)                           |                        | 45(100.0)  | 0.000   |
| Thyroid                |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | 0(0.0)                             | 0(0.0)                 | -          | -       | 0(0.0)                            | 45(100)                | 0(0.0)     | -       |
| No                     | 155(100)                           | 155(100)               | -          | -       | 0(0.0)                            | 45(100)                | 0(0.0)     | -       |
| Tuberculosis           |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | -                                  | -                      | -          | -       | -                                  | -                      | -          | -       |
| No                     | 155(100)                           | 155(100)               | -          | -       | -                                  | -                      | -          | -       |
| Fibroid operation      |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | 15(9.7)                            | 1(0.6)                 | 0.06       | 0.000   | 5(11.1)                           | 40(88.9)               | 0(0.0)     | 0.021   |
| No                     | 140(90.3)                          | 154(99.4)              |           |         | 40(88.9)                           |                        | 45(100)    | 0.000   |
| Other operation        |                                    |                        |            |         |                                    |                        |            |         |
| Yes                    | 1(0.6)                             | 0(0.0)                 | -          | 0.317   | 0(0.0)                            | 45(100)                | 0(0.0)     | -       |
| No                     | 154(99.4)                          | 155(100)               | -          |         | 45(100)                           |                        | 45(100)    | -       |

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Table 4 presents the analysis of cases of infertility and the control according to their gynaecological conditions. The gynaecological conditions in the subjects included fibroids, which was present in 46 (29.7%) cases of secondary infertility compare to 11 (7.1%) of their control, the risk of secondary infertility among them was significantly higher than their control [OR=0.18, 95% CI=0.09-0.37, P=0.00].

Similarly, among the cases of primary infertility, 15 (33.3%) had fibroids compared to only 1 (2.2%) of their control; the risk of primary infertility was significantly higher than the control [OR=0.07, 95% CI=0.008-0.64, P=0.00]. Among the cases of secondary infertility, 50 (32.3%) had endometriosis, 35 (22.6%) of their control had similar condition, while in the cases of primary infertility, 15 (33.3%) had endometriosis and 10 (22.2%) had the condition; there was no statistically significant difference in both groups at p>0.05. Among the 2 groups, 114 (73.5%) of those with secondary infertility had previous abortion compared to 53 (34.2%) of their control; the risk of secondary infertility was significantly higher than the control [OR=0.19, 95% CI=0.12-0.30, p=0.000]. Post abortion sepsis was reported in 30 (19.4%) of cases of secondary infertility and only 10 (6.5%) of the control with a statistically significant higher risk among the cases [OR=0.29, 95% CI=0.14-0.61, p=0.001]. Another gynaecological condition prevalent was polycystic ovary syndrome (PCOS), which was reported in 53 (34.2%) cases of secondary infertility and 7 (4.5%) of their control, the risk of PCOS among those with secondary infertility was significantly higher than their control [OR=0.09, 95% CI=0.04-0.21, p=0.000] while in the cases of primary infertility, it was reported in 18 (40.0%) and 2 (4.4%) of their control and the risk of PCOS was also significantly higher than the control [OR=0.01, 95% CI=0.01-0.52, p=0.000]. Sexually transmitted infection was reported in 47 (30.3%) cases of secondary infertility and 18 (11.6%) of their control with a significantly higher risk of this condition among these cases [OR=0.30, 95% CI=0.17-0.55, p=0.000], while

| Gynaecological conditions | 2° infertility cases | Control | 1° infertility cases | Control | OR (95%CI) | P value | OR (95%CI) | P value |
|---------------------------|---------------------|---------|---------------------|---------|------------|---------|------------|---------|
| Endometriosis             | Yes                 | 50 (32.3) | 105 (67.7) | 35 (22.6) | 120 (77.4) | 0.61 (0.37-1.02) | 0.056 | 15 (33.3) | 30 (66.7) | 10 (22.2) | 35 (77.8) | 0.79 (0.17-3.69) | 0.239 |
|                           | No                  | 109 (70.3) | 41 (26.5) | 11 (7.1) | 144 (92.9) | 0.18 (0.09-0.37) | 0.000 | 41 (26.5) | 102 (65.8) | 53 (34.2) | 149 (95.5) | 0.09 (0.04-0.21) | 0.000 |
|                           |                     | 0.19 (0.12-0.30) | 0.000 | 0 (0.0) | 45 (100) | 16 (35.6) | 29 (64.4) | 0.000 |
| Previous abortion         | Yes                 | 114 (73.5) | 41 (26.5) | 53 (34.2) | 102 (65.8) | 0.55 (0.22-1.35) | 0.184 | 18 (40.0) | 27 (60.0) | 2 (4.4) | 43 (95.6) | 0.01 (0.01-0.52) | 0.000 |
|                           | No                  | 147 (94.8) | 14 (9.0) | 147 (94.8) | 8 (5.2) | 1.26 (0.48-3.30) | 0.627 | 41 (91.1) | 8 (17.8) | 37 (82.2) | 8 (17.8) | 0.83 (0.10-6.71) | 0.215 |
| PCOS                      | Yes                 | 8 (5.2) | 147 (94.8) | 10 (6.5) | 145 (93.5) | 0.30 (0.17-0.55) | 0.000 | 0 (0.0) | 45 (94.8) | 0 (0.0) | 4 (8.9) | 41 (91.1) | 0.000 |
|                           | No                  | 18 (11.6) | 137 (88.4) | 0 (0.0) | 137 (88.4) | 0.14 (0.01-0.55) | 0.001 | 7 (15.6) | 38 (84.4) | 6 (13.3) | 39 (86.7) | 1.11 (0.21-5.89) | 0.764 |
| STI                       | Yes                 | 30 (19.4) | 125 (80.6) | 10 (6.5) | 145 (93.5) | 0.71 (0.0-0.0) | 0.078 | 0 (0.0) | 45 (100) | 3 (6.7) | 42 (93.3) | 0.000 |
|                           | No                  | 47 (30.3) | 108 (69.7) | 18 (11.6) | 137 (88.4) | 0.71 (0.0-0.0) | 0.078 | 0 (0.0) | 45 (100) | 3 (6.7) | 42 (93.3) | 0.000 |
among the cases of primary infertility 6 (13.3%) and 7 (15.6%) of their control reported to have had this condition, this was not statistically significant, p>0.05. Among the cases of secondary infertility, 8 (5.2%) and 10 (6.5%) of the control had genital infection, there was no statistically significant difference in both groups. Menstrual irregularity was found in 14 (9.0%) cases of infertility compared to 8 (5.2%) of their control and 8 (17.8%) of primary infertility compared to 4 (8.9%) of the control, this was not statistically significant.

Table 5 showed various predictors of secondary and primary infertility using Stepwise logistic regression analysis of the various independent risk factors for infertility.

Table 5. Stepwise logistic regression to identify predictors of female infertility

| Independent variable       | B  | S.E. (Standard Error) | Test | P. value | OR  | 95% CI        |
|----------------------------|----|-----------------------|------|----------|-----|--------------|
| Model (1): For Secondary infertility |     |                       |      |          |     |              |
| Fibroid diagnosis          | 1.113 | 0.426               | 6.838 | 0.009    | 3.04 | 1.32-7.01    |
| Fibroid operation          | 1.621 | 1.151               | 1.984 | 0.159    | 5.06 | 0.53-48.21   |
| PCOS                       | 2.213 | 0.45                | 24.174 | 0.00     | 9.14 | 3.78-22.08   |
| STI                        | 0.746 | 0.359               | 4.325 | 0.038    | 2.11 | 1.04-4.26    |
| Post abortion sepsis       | -0.271 | 0.473              | 0.329 | 0.57     | 0.76 | 0.30-1.93    |
| Previous abortion          | 1.544 | 0.294               | 27.564 | 0.000    | 4.68 | 2.63-8.33    |
| Constant                   | -12.393 | 2.50               | 24.487 |          |     |              |
| Model (2):For Primary infertility |     |                       |      |          |     |              |
| Fibroid diagnosis          | 2.508 | 1.118               | 5.034 | 0.025    | 12.28 | 1.37-109.86 |
| PCOS                       | 2.884 | 1.13                | 6.489 | 0.01     | 17.88 | 1.94-164.51 |
| STI                        | -0.052 | 0.84              | 0.004 | 0.951    | 0.949 | 0.18-4.94   |
| Constant                   | -12.393 | 2.50               | 24.487 | 0.000    |     |              |

In Model 1, among the various significant factors detected by the binary logistic regression analysis for secondary infertility only the presence of fibroids [OR=3.04, 95% CI=1.32-7.01, p=0.009], polycystic ovarian syndrome [OR=9.14, 95% CI=3.78-22.08, P=0.00], sexually transmitted infection [OR=2.11, 95% CI=1.04-4.26, p=0.038] and previous abortion [OR=4.68, 95% CI=2.63-8.33, p=0.000] were predictors of secondary infertility. In Model 2, the presence of fibroids [OR=12.28, 95% CI=1.37-109.86, p=0.025] and polycystic ovary syndrome [OR=17.88, 95% CI=1.94-164.51, p=0.01] were the predictors of primary infertility.

Discussion

The study showed that secondary infertility was commoner among the women (77.5%) than primary infertility (22.5%), which is in keeping with studies carried out in other parts of Nigeria [11,12,13]. It further highlights the burden of secondary infertility which is more prevalent in Sub-Saharan African countries compared to the Western world [14]. The demographic characteristics of the subjects showed that most of the women were already married and possibly in a sexual relationship to enable one ascertain if there are issues concerning their fertility. Other factors such as the woman’s age, religion, educational level had no impact on fertility as against a similar study which reported a decrease in a woman’s fertility with increasing age [15]. These factors therefore were not risk factors for infertility among our women.

Menstrual irregularity was seen in some of the women with secondary infertility though not statistically significant and therefore suggest that this has no strong effect as a risk factor for infertility among our women. However, having multiple sexual partners was a significant risk factor for infertility among the women, which further confirmed the increase in sexually transmitted infection which was also reported among the women with secondary infertility. Sexually transmitted infections are transmitted through sexual activity with an infected partner and a major cause of secondary infertility in Sub-Saharan Africa [6].

This study also highlights gynaecological conditions such as the presence of fibroids and previous abdominal surgeries for fibroids as risk factors for female infertility which is in keeping with another study [16]. Large fibroids may cause infertility by impairing the uterine lining, blocking the fallopian tube, distorting the shape of the uterine cavity or altering the
position of the cervix. Also, following pelvic surgery, postsurgical or post infective uterine or abdominal adhesions that result may restrict the movement of ovaries and fallopian tubes and cause infertility.

Previous abortion and post abortion sepsis were significant risk factors for secondary infertility in this study. This finding has also been reported in another study in Nigeria where induced abortion and post abortion sepsis were found to affect future fertility [17]. This may be as a result of repeated injuries to the uterine lining from multiple dilatation and curettage which can cause adhesions within the uterus thus leading to secondary amenorrhea and infertility. However, genital infection did not have any significant effect on the cause of infertility, this could have been due to increase access to health care and the presence of skilled birth attendants during delivery.

This study showed ovarian dysfunction as a result of polycystic ovary syndrome to be a significant cause of both primary and secondary infertility among the women, similar studies have shown that nearly 10% of infertile women are diagnosed with reduced ovarian dysfunction and polycystic ovary syndrome implicated as a common cause of ovulation disorder in women of childbearing age [18,19,20].

In this study the main predictors of female infertility were the presence of fibroids, polycystic ovary syndrome, sexually transmitted infections and previously induced abortions for unwanted pregnancies. These findings have further revealed the great impact of reproductive infections and hormonal imbalance as major causes of female infertility.

**Conclusion**

Female infertility is still a major public health issue and its cause could be multifactorial. Secondary infertility remains the most prevalent type in the region mostly due to tubal damage as a result of increase in sexually transmitted infections and previous induced abortions. Though, hormonal cause such as polycystic ovary syndrome may not be under our control, reproductive infections from sexual activity could be curtailed by preventing unsafe sex and prompt treatment of diseases resulting from sexually transmitted infections. Efforts should be intensified to prevent unsafe abortions which could lead to infertility in the future.

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**Conflict of Interests**

The author declares no conflict of interest.
Висновки. Дослідження показало, що вторинне безпліддя все ще переважає у структурі захворюваності, фактори ризику – мульфакторіальні. Зусилля, спрямовані на зменшення розвитку непліддя через фактори, які можна попередити, повинні бути посилені.

KEY WORDS: жіноче безпліддя; фактори ризику; фіброз; синдром полікистозних яйників; хвороби, що передаються статевим шляхом.

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