Original Article

Factors associated with Infertility among Women attending the Gynaecology Clinic at University Teaching Hospital, Lusaka, Zambia

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ABSTRACT

Objectives: The objective of this study was to investigate and determine the factors associated with infertility in women attending the gynaecology clinic at the University Teaching Hospital (UTH) in Lusaka, Zambia.

Methods: Using an unmatched case-control study design, women attending the gynaecology clinic for infertility were enrolled. Controls were randomly selected from women in the labour ward. An investigator-administered questionnaire was used to collect data. Bivariable analysis was used to determine association between infertility and demographic and previous gynaecological history. Odds ratios were used to determine statistical significance. Associations with a p<0.05 were further analysed by multivariable logistic regression.

Results: One hundred and thirty women were selected as cases and 260 were selected as controls. Overall, primary infertility was found to be affecting 50/130 (38.4 percent) of the women while secondary infertility was found in 80/130 (61.5 percent). In bivariate analyses, the following variables were statistically significant at the 95% CI level: age group (20-29y OR 2.39; 30-39y OR 8.42); marital status (married OR 1.16; single OR 0.017); partner's consumption of alcohol (OR 2.80); frequency of menses (irregular OR 2.27; regular 3.81); whether they'd ever been pregnant (never been OR 151) having had an manual vacuum aspiration (MVA) (OR 0.24); having had a pelvic infection or operation (OR 0.18). In multivariable logistic regression analysis, five factors were independent and statistically significant correlates of infertility: age at menarche, frequency of menses, having a pelvic procedure done, and having an MVA done.

Conclusion: The problem of primary infertility at UTH was similar to that reported in other sub-Saharan countries. Secondary infertility was more prevalent than primary infertility. Infertility was found to be most prevalent among women aged 30-39 years. Of the factors studied, having had a pelvic procedure or an MVA was significantly related to being infertile. The most commonly ordered investigations were hormonal, HSG, USS and semenalysis.

INTRODUCTION

Infertility is a public health problem which affects millions of couples worldwide and has devastating psychosocial consequences on affected couples. The highest incidence is in some areas of sub-Saharan Africa, where rates of up to 50 percent have been recorded. In eastern Mediterranean, this rate is about 20 percent.[1] Developing countries experience negative consequences of childlessness to a greater degree than western societies. In most developing countries, reproductive health is almost equalled to decreasing the number of births but infertility is given little or no attention.[2] Clinical infertility is defined as the inability to become pregnant after 12 months of unprotected intercourse. The causes of infertility are wide ranging including diagnoses such as ovulatory disorders, fallopian tubal disease, endometriosis, chromosomal abnormalities, sperm-related factors and unexplained infertility.[3]

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The prevalence of infertility varies between countries mainly due to variations in lifestyle factors causing or contributing to the infertility status.[4] In a study conducted in Nigeria, it was found that pelvic infection, unsafe abortion and previous laparotomy were recognised risk factors for the development of tubal infertility.[5] Researchers in reported that previous pelvic surgery may be the cause of tubal obstruction in patients with secondary infertility.[6]

In Zambia, fertility trends have been studied by some workers.[7] However, the prevalence of infertility has not been well-documented. The University Teaching Hospital (UTH) serves as a tertiary referral hospital not only for the surrounding clinics in Lusaka, but also the whole Lusaka province, and indeed the whole country. It serves a diverse population from a wide socioeconomic spectrum. In 2012 the total number of patients that were seen in the gynaecology clinic at UTH was 6,993. These were seen for conditions including menstrual problems, gynaecological malignancies, pelvic infections and chronic pelvic pain and infertility and others. There were 1,243 (17.8 percent) patients seen for infertility. This current study was undertaken to determine the factors associated with infertility among patients attending the gynaecology clinic at the University Teaching Hospital in Lusaka, Zambia.

METHODS

An unmatched case-control study was conducted at the Gynaecology clinic in the University Teaching Hospital. A total of 390 patients were recruited comprising 130 cases and 260 controls. Data was collected using a structured questionnaire and analysed using STATA®.

RESULTS

A total of 390 women participated in the study comprising 130 infertile (cases), and 260 fertile (controls). The general characteristics of the study population are shown in Table 1. The average age of the respondents (both cases and controls) was 25.4 years with a range of 12-43 years. Most women were between the ages of 20-29 (50.6 percent).

Table 1: Sociodemographic characteristics of patients

Variable	Category	Total	%
Age (years)	Mean (SD)	25.4 (6.2)	
Age groups	12-19	33	8.5
	20-29	197	50.6
	30-39	148	38.0
	40+	8	2.1
	Unreported	4	1
Marital status	Not Reported	2	0.5
	Married	294	75.3
	Divorced	5	1.2
	Single	89	22.8
Age menarche	Not Reported	103	26.4
	9-12	120	30.7
	13-15	149	37.9
	16-19	14	3.6
	19+	4	1.0
Alcohol Use	Unreported	1	0.3
	Yes	234	60
	No	155	39.7
Partner's alcohol use	Unreported	1	0.3
	Yes	162	41.5
	No	227	58.2
Age at sexual debut	Unreported	110	28.2
	<15	37	9.5
	16-19	174	44.6
	20+	69	17.7

Table 2. Reproductive charcteristics of patients

Variable	Category	Cases (Infertile) N (%)	Controls (Fertile) N (%)	P value Pearson chi^2
Marital status	Divorced	2 (1.5)	3 (1.2)	
	Married	129 (99.2)	166 (63.8)	0.000
	Single	1 (0.8)	88 (33.7)	
Partner consumes alcohol	Yes	34 (26.2)	128 (49.2)	0.000
	No	96 (73.8)	130 (50)	
Frequency of menses	Amenorrhoea	6 (4.6)	0	
	Irregular	28 (21.5)	12 (4.6)	0.000
	Regular	96 (73.8)	245 (94.2)	
Pregnancy	Unreported			
	Yes	80 (61.5)	260 (100)	0.000
	No	50 (38.5)		
MVA	Unreported	0	2 (0.8)	
	Yes	28 (21.5)	16 (6.2)	0.000
	No	102 (78.5)	242 (93.1)	
Pelvic process	Unreported	0	2 (0.2)	
	Yes	36 (27.7)	17 (6.5)	0.000
	No	94 (72.3)	241 (92.7)	

DISCUSSION

The key findings of this study were that primary infertility was less prevalent than secondary infertility. Women aged between 30-34 years had higher infertility rates than did the other age groups. Overall more women reported using some form of contraceptive. Of those using contraceptives, there were more women who used barrier methods of contraception than any other form. Women whose partners consumed alcohol were more likely to be infertile. Having an MVA, pelvic procedure, age at menarche and frequency of menses were all independent predictors of infertility. The most commonly ordered investigations were hormonal, HSG, USS and semenalysis.

Women aged 20-29 years were more likely to have primary infertility than secondary infertility 32/52 (61.5 percent) and 20/52 (38.5 percent), respectively. In the age group 30-44 years, secondary infertility was more common than primary infertility. These results are similar to those reported by Larsen who found that primary infertility was relatively low in 28 African countries studied. Secondary infertility for women aged 20-44 years ranged from 5 to 23 percent.[8] This finding was simlar to that found by researchers in Latin America, Asia and North Africa .

Among the infertile women, 3.66 percent reported having had an ectopic pregnancy and 40.24 percent had had miscarriages. Further, among women who had had a miscarriage, more infertile women had an MVA as compared to fertile ones (21.54 percent compared to 6.20 percent). This is reflected in the greater risk of infertility associated with having and MVA (OR 0.24; 95 percent 95% CI 0.13-0.53).

Women whose partners consumed alcohol had a more than 2 times risk of being infertile. The woman's consumption of alcohol had no effect on her fertility status. Other authors have found that social factors such as weight, smoking, alcohol consumption and caffeine consumption affect fertility. The odds ratio associated with having irregular menses and being infertile were 2.27. Those women who had regular menses were found to have an odds ratio of 3.81.

The number of women who had any investigations done was relatively low. Hormonal tests were ordered in 29/130 (38.1 percent) women, USS in 72/130 (90.9 percent), semen analysis in 11/130 (18.29 percent), and HSG in 11/130 (18.29 percent). The hormone, USS and HSG results showed more normal results as compared to abnormal ones. In a study conducted in Oman, the prevalence of fallopian tubal obstruction was 19.1 percent in primary infertility and 28.7 percent in secondary infertility. The study also found that surgery for ectopic pregnancy, myomectomy, caesarean section, appendectomy, cystectomy etc., were significantly higher for women with secondary infertility compared to those with primary infertility.[10] This is comparable to what was found in this current study where 7/11 (63.6 percent) had abnormal HSGs. Of these, 2/7 (28.5 percent) had primary infertility and 5/7 (71.4 percent) had secondary infertility. Following investigations that were done, only 23.26 percent of patients then received any form of treatment, whether medical or surgical. This finding reflects the low level of investigations that are ordered and this had a bearing on the interpretation as it meant that it was not possible to determine whether the infertility was

primarily due to female or male factors or both were equally responsible. The results for semenalysis were abnormal in 8 (72.7 percent). Araoye found that male factor infertility was associated with primary infertility. Male factor contribution to infertility has been reported to be 20-40 percent.[11]

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