Differences in Socio-Demographic Profile of Infertile and Fertile Women in Calabar, Nigeria

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Abstract

Infertility constitutes a social and family crisis in some communities. Evaluation and treatments are expensive. The aim of this study was to identify differences in socio-demographic factors between women with infertility and fertile women in Calabar, Nigeria. One hundred and fifty-two infertile women in the gynaecological clinics and 133 recruited from family planning clinics as controls were involved in the study. Pretested questionnaires which covered age, educational level, occupation of spouse, marital status, duration of marriage, duration of infertility and obstetrics history were administered. Anthropometric measurement of body mass index was done. Data were analysed using Statistical Package for social science version 16. Statistical significant level was p value = 0.05. Almost 50% of the infertile women were more than 30years (mean 30. + 1.38years). More than 50% of the women in both groups were in social class 2 and 3 and a greater percentage of infertile women were in the low social class 4 and 5 compared to the control (p value= 0.2802). Average duration of infertility was 3.89 years + 3.433 (SD). Infertile women were also more likely than the control to be obese (BMI 30 and above), 22.3% versus 14.3% respectively (p value= 0.0358). The ratio of secondary to primary infertility was 4:1. About 65.3% of infertile women were nulliparous and 20% of them had experienced childlessness for 10 years and above but the divorce rate was only 1.3%.

Conclusion: Lifestyle adjustment to maintain suitable body mass index and women empowerment may improve prognosis of infertility.

Keywords: Age; Social Class; Duration of Marriage; Divorce; Obesity; Infertile; Fertile

Introduction

Infertility is a common and multifaceted medical and social problem affecting about 10% of couples globally [1-3]. It has been considered a serious handicap preventing people from realizing an important life goal and treatments in turn allow these people to express their autonomy by realizing their reproductive choices thus increasing their wellbeing [4]. The high prevalence of infertility in Calabar has profound implication for women's reproductive health and overall wellbeing. As a result of high premium placed on childbearing in many societies, infertility may bring social and economic destabilizing impact in the affected couples and families [3-5]. Previous studies conducted among women in several countries across Africa have revealed that infertility ranks as one of the most frightening reproductive health challenges for women [3,6].

Infertility cuts across all age groups, social classes and parities [6]. Sex preference is also an important factor in some communities. In a study by Umeora and colleagues [7] in South- Eastern Nigeria, infertile women of high parity were found to have strong desire for a male offspring because this was considered an important stabilizing factor in the family unity and productivity.

The impact of social class on infertility has been studied by several authors. Bell A.V. [8] reported that lower class women had far less support for their fertility struggles than the higher class women because of different peer groups, marital rates, and discussion of personal topics like infertility within their communities. Also, higher class women are more likely to utilize various technological procedures to become pregnant. Tubal damage due to pelvic inflammatory disease is a major cause of infertility in Sub-Saharan Africa [9]. High prevalence of poorly treated pelvic inflammatory disease has been reported among women of lower social class. Furthermore, women of low social class are more likely to be affected by ignorance and deceit perpetrated by some traditional healers and spiritualists and thus may subject themselves to inappropriate or harmful herbal medication [7].

A regulatory role of nutritional status on reproductive ability was first hypothesized by Frisch [10] and the clearest evidence for a relationship between nutritional status and ovarian hormone level comes from studies on women with anorexia nervosa [11,12]. In these women, low body mass index (BMI) was related to low levels of estradiol and inhibition of menstrual cycles. Weight gain and elevated body weight are frequently associated with endocrine disorders like diabetes mellitus and prolactinomas [13].

The impact of obesity on infertility is also seen in Polycystic ovary syndrome (PCOS), a common cause of ovulatory dysfunction, in which about 50% of the women affected have BMI above normal levels [14]. Lifestyle adjustment to reduce weight has been recognized as integral component of management of women with Polycystic Ovary Syndrome [14]. A study by Rich-Edwards and colleagues [15] reported 12% of ovulatory infertility in the United States of America may be attributable to underweight (BMI < 20.0) and 25% overweight (BMI > or = 25.0).

Infertility is one of the commonest problems in gynaecological clinics in Calabar. The manner of clinical presentation varies from one place to another, depending on the socio-economic and cultural environment from which the patients come. In order to shed more light on the risk factors and their relative contribution to infertility in Calabar, we conducted this prospective study comparing the socio-demographic characteristics of the women with infertility and a representative of the fertile population.

Materials and Methods

This was a cross-sectional comparable study conducted between August and December 2011 involving 152 consenting infertile women in the out patient gynaecological clinics of UCTH and two private specialist clinics. One hundred and thirty-three aged- matched controls were recruited from family planning clinics in Calabar. The study was approved by Research and Ethics committee of UCTH. Approval was also received from the private clinics involved. The purpose of the study was explained to the participants who gave informed consent. Each respondent completed a structured questionnaire. Demographic information included age, highest educational attainment, occupation of spouse, marital status, duration of marriage, duration of infertility and obstetrics history. Anthropometric measurement was done for weight (in kilograms) and height (in meters) using standard scale. The body mass index (BMI) was calculated in the standard way: weight in Kilogram divided by height in metre square.

Data analyses were performed using statistical package for social sciences (SPSS) version 18 Inc. Chicago, Illinois – USA. For descriptive purposes mean values and standard deviations were reported. A level of P < 0.05 was set as statistically significant.

Results

The mean ages in years of the women in both groups were comparable: 30.7+1.38 (SD) in the infertile group and 29.3+1.39 (SD) in the controls (Table 1). About 93% of the infertile women were married while four women were single but have been co-habiting with

their prospective partners for more than one-year desiring to conceive. Five of the women were engaged to their partners while 2 women had been separated from their husbands due to infertility. Among the 133 fertile women, 97.7% were married, two were single and one was a widow. Table 2 shows details of the marital status in both groups (Figure 1). About 65 % of the infertile subjects were nulliparous (Table 3). The remaining 35% were those who have delivered child/children before but unsatisfied with small family size or had lost their children or in a new relationship. Seven of them were grand multiparous women desiring a male child.

Age	Study group n = 152		Control group n= 133	
	Frequency (n)	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
≤ 20	10	7	8	6
21 - 25	18	11.8	43	32.3
26 - 30	58	38.2	28	21.1
31 - 35	42	27.6	11	8.3
≥ 36	33	21.7	41	30.8
Total	152	100		

Table 1: *Age distribution of respondents.*
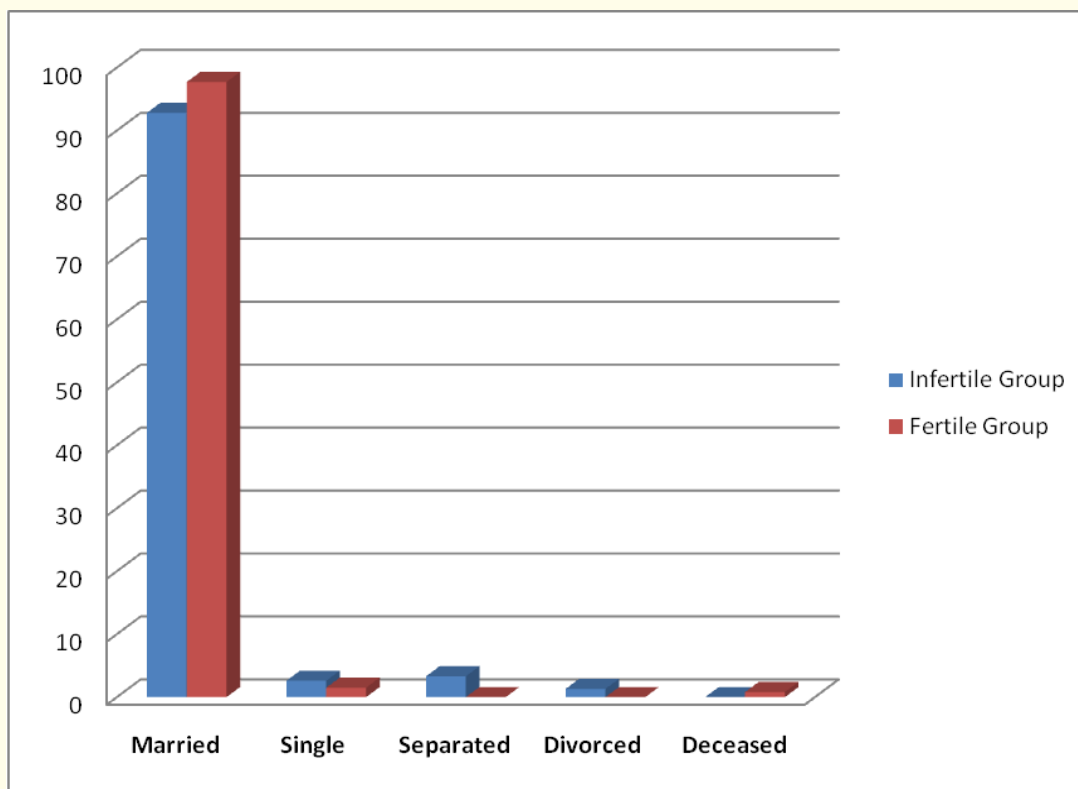
Figure 1: *Shows the marital status in the two groups.*

Marital status	Study group n = 152		Control group n= 133	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Married	141	92.8	130	97.7
Single	4	2.6	2	1.5
Separated	5	3.3	0	0
Divorced	2	1.3	0	0
Deceased	0	0	1	0.8
Total	152	100	133	100

Table 2: *Shows the marital status in the two groups.*

Parity	Study group n = 152		Control group n= 133	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Nulliparous	99	65.3	1	0.8
1	23	15.1	41	30.8
2	15	9.7	47	35.3
3	8	5.3	19	14.3
≥ 4	7	4.6	25	18.8
Total	152	100	133	100

Table 3: *Parity distribution of the women.*

The social classes of the respondents were determined using the classification by Olusanya and Okpere [16] based on the highest educational attainment of the woman and the occupation of her spouse. Table 4 below shows that majority of the women in both groups were in social class 2 and 3.

Social class	Study group n = 152		Control group n= 133	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	15	9.9	16	12.0
2	49	32.2	54	40.6
3	59	38.8	44	33.1
4	23	15.1	15	11.3
5	6	4.0	4	3.0

Table 4: *Social class of respondents.*

In the highest social class (social class 1), 9.9% versus 12.0% of infertile and fertile women respectively belonged to this group. Also, infertile women were more in the lowest social class 4 and 5: 19.1% versus 14.3% respectively compared to the controls (p = 0.2802). Secondary infertility was found in 118 women (77.6%) and primary infertility occurred in only 34 (22.4%) in the study group. The mean duration of infertility was 3.89 years +3.433 (SD). This study found that 44.7% of the respondents were unable to conceive within 2years of marriage/relationship while 20% were married for 10 years and above without children. Only 2 (1.3%) of the infertile women were divorced.

The BMI in the infertile group range from 19.3 Kg/m^2 to 38.5 Kg/m^2 and the mean BMI was 27.19 Kg/m^2. The mean BMI in the control was 25.84 Kg/m^2 (range 18.9 to 39.3 Kg/m^2). Table 5 shows that the infertile women were more likely than the controls to be obese (BMI

30 to 34.9 kg/m^2), p value =0.0358, but there was no statistically significant difference in the incidence of morbid obesity (BMI > 40 kg/m^2) which was an uncommon finding in this study, 3.9% versus 4.5% in infertile group and the controls respectively, (p = 0.08015). More than 50% of the respondents in both groups have BMI between 20 and 30 Kg/m^2.

Body mass index (BMI) In kg/m^2	Study group n = 152		Control group n= 133		p-value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
$\leq$ 19.9	2	1.3	4	3	0.3297
20 - 24.9	46	30.3	54	40.6	0.0704
25 - 29.9	70	46.1	56	42.1	0.4973
30 – 34.9	28	18.4	13	9.8	0.0358
$\geq$ 35	6	3.9	6	4.5	0.8015
Total	152	100	133	100	

Table 5: Body mass index of both groups.

Discussion

Infertility is a common medical, social and cultural problem in Africa. Infertility treatments also vary by age, education, household income and in some countries ethnicity.

The mean age of 30.7 years + 1.38(SD) of the infertile women studied indicates that a significant number of them were seeking childbearing at age 30 and above. This may be explained as this study was conducted on women seeking treatment in specialist centres as acceptance for childlessness may have occurred after multiple attempts with age. As both men and women delay childbearing, an emerging disorder is being recognized, that of the aging gamete [17,18]. As women enter the last quarter of their reproductive life, anovulation, spontaneous abortions, and decreased fertilization are much more common [19,20]. In addition, there may be an increased incidence of gynaecological disorders such as pelvic endometrosis, leiomyoma, intrauterine adhesions, and adenomyosis with advancing age [21]. The peak rate of conception occurs in both men and women in the mid-twenties [18,19].

Majority of the studied women were in the middle and lower social class. Infertility evaluation and treatment is often expensive. In Nigeria, National health scheme does not cover investigations and treatment for infertility. Therefore, the financial burden is often left with the infertile couples. The minute number of the respondents in both groups in this study in the social class one is a reflection of poverty and proportion of un-empowered women in our society. The minimum wage in Nigeria is #18,000 (< $50) while the first line investigation for infertility in our hospital costs about #25,000 ($67). In a study of fertility trends by social status by Skirbekk., et al. [22], high status group had significant higher fertility rates than the low status group. Education can affect preferences for fertility timing and outcomes, raise female autonomy, increase contraceptive use and raise the opportunity costs of childbearing [23]. However, according to Skirbekk [22], it may also be argued that education can reduce fertility if opportunity costs increase with schooling, which, for example could be the case when wages or income rates are highly dependent on educational levels.

Furthermore, this study also considers male factor (spouses' occupation and income) in deciding the social class. Studies have shown how male wealth and social status can impact positively on fertility potentials [24]. Furthermore, fertility preference is high in societies with no social welfare schemes for elderly as childbearing may be perceived as a basic social insurance, as children are expected to grow up and support their parents when they become old and dependent [24-26].

In this study, almost one fifth of the couples with infertility had experienced childlessness for more than 10years. Despite this, divorce rate was very low (1.3%). This may be due to the fact that women who divorce as a result of infertility may not present for investigations

because of inadequate financial capability, unwillingness to face the same situation in a new union and difficulty in finding a partner willing to accept a woman with history of infertility. In several communities in Africa these women are often stigmatized and marital disharmony is common which may result in physical violence against women [3]. The unsolicited and often impatient societal demands and expectations place on such couples, unimaginable pressure and tension potentially resulting in divorce. In a study by Umeora., *et al*. [7] in South East Nigeria revealed that significant proportion of infertile women expressed feeling of abandonment, frustration and depression.

Our study shows that infertile women were statistically significantly more likely than the controls to be obese (BMI of 30 - 34.9 kg/m^2), p = 0.0358. This is similar to finding in the study by Mola [27] who found a positive association between being overweight and seeking care for infertility. Obesity is an increasing prevalent health burden upon modern society. Obesity and its negative impact upon fecundity and fertility are well documented [28]. In women early onset of obesity favours the development of menstrual irregularities, chronic oligo-ovulation or anovulation and infertility in the adult age [30]. Obesity can also impair fertility through an effect upon the control of ovulation, oocyte development, embryo development, endometrial development, implantation and pregnancy loss [29,30]. Body weight loss is associated with beneficial effects on hormones, metabolism and clinical features [14]. A recent analysis Maheshwari., *et al*. [31] demonstrated an increased risk of miscarriage among obese women (BMI > 30 kg/m^2) undergoing assisted conception.

Conclusion

Infertility in women has a varied impact on multiple dimensions of health and functioning such as quality of live and marital adjustment. While we often spend much resource, man power and research on investigation and treatment it is also imperative to promote measures needed to impact positively on the socio-economic and lifestyle adjustment on the affected women.

Limitation

This study relied in part on the information obtained with a pre-coded questionnaire and history obtained from the patients. Some important facts as such might not have been volunteered.

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