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Psychosocial Effects of Infertility among Infertile Women Attending the Outpatient Consultation Unit of Chracerh Yaoundé Cameroon; a Cross-Sectional Study

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ABSTRACT

Introduction: *Infertility is a public health problem that has severe psychosocial repercussions on affected persons though it is not a life-threatening condition. The psychosocial consequences of infertility include depression, anxiety, problems with sexual relations, marital issues, violence, a decline in self-confidence, jealousy, and a poor quality of life. In Cameroon, little is known about the effects of infertility on women's mental health and social lives.*

Objective: *The present study aimed to evaluate the sociodemographic characteristics and psychosocial effects of infertility among infertile women attending the outpatient consultation unit of the Hospital Center for Research in Endoscopic Surgery and Human Reproduction (CHRACERH) Yaoundé, Cameroon.*

Materials and Methods: *This was a descriptive hospital-based cross-sectional study with a quantitative data collection method from the 14th of March to the 6th of April 2023 at the outpatient consultation unit of CHRACERH Yaoundé. Sociodemographic, psychological status using the GHQ-28, and social effects of infertility data were collected with a pretested questionnaire. Descriptive statistics, thematic analysis and Chi-square test was used for statistical analysis using the SPSS software. Statistical significance was set at $P<0.05$.*

Results: *The mean age of participants was 39.52±7.64 years, the mean duration of infertility was 10.27±7.9 years and secondary infertility was higher 53.2%. The prevalence of psychological disorder was 40%. The overall mental score was 23.2±11.85, highest subscale score was anxiety 7.92±5.39 (14.7%) and the lowest was depression 2.74±3.77 (1.6%). The social effects identified include 1) Mood changes; frustration (35.8%), joy impaired (55.8%) and envious of pregnant woman (97.9%). 2) Relationship changes; Sexual life is conditioned by need for a child (33.2%), problems with partner (29.5%), fear of divorce (36.8%), husband having children out of marriage (51.1%); 3) Stigma; sense of guilt (74.2%), and suicidal ideation (5.3%).*

Conclusion: *Most of the study participants were in the late thirties. Anxiety was the predominant symptom and depression was the least. Over one-third participants feared losing their partner.*

Keywords
Infertility, Female, Psychological and social effects, Depression, Anxiety, Mental health.

Abreviations
CHRACERH: Centre Hospitalier de Recherche et d'Application en Chirurgie Endoscopique et Reproduction Humaine, GHQ-28: General Heath Questionnaire-28.

Introduction
The World Health Organization (WHO), American Society for Reproductive Medicine (ASRM), European Society for Human Reproduction and Embryology (ESHRE) and the American Medical Association (AMA) have defined Infertility as a" disease of the reproductive system characterized by failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse" [1-4]. Evaluation and treatment for infertility may start at 12 months for women under 35 and at 6 months for those who are 35 years of age or older, provided no other issues are present. For women over 40, more immediate evaluation and treatment may be recommended [5].

Infertility has severe psychosocial repercussions on affected persons even though it is not a life-threatening disease. Couples who get diagnosed with infertility and embark on the ensuing treatment process typically suffer from enormous stress.

It has been reported previously that infertile couples are more likely to experience the psychosocial consequences of the condition, which include depression [6], anxiety [7], problems with sexual relations, marital issues, violence [8,9], a decline in self-confidence, jealousy [10,11], low levels of psychological well-being [12], and a poor quality of life [13]. Since infertility is a major public health problem, affecting about 10-15% of women worldwide [14], 32% in some ethnic groups in Africa and between 10% to 30% in Cameroon [15], the psychosocial problems related to the condition should not be underestimated.

Besides, other mental effects may also arise from drug side effects and hormones used to treat infertility. For example, the synthetic estrogen clomiphene citrate (Clomid™, Serophene™), which is often prescribed to induce ovulation, can trigger anxiety, interruptions of sleep, and irritability in women [16]. In many cultures across Cameroon, childless women face discrimination, and stigma if they fail to become pregnant or carry a baby to term [17]. Social pressure may arise from partners, friends, and family resulting in detachment from family and decreased social interaction [16]. In Nigeria, pregnancy and childbirth were pre-requisite for entry into the stage of mature womanhood, childless women were insulted and were not allowed to play leading roles in society formerly but in recent times the likelihood of spousal violence is lower among childless women in Nigeria. Causes of spousal violence against women cut across individual, family, and community characteristics irrespective of childlessness or number of children [18]. In Iran, infertility is a legal base for divorce [19]. In some societies example Muslim societies, childlessness can especially be very distressing for infertile females because their religion and culture allow men to have more than one wife at the same time, and a female's inability to conceive gives them a valid excuse to remarry [20]. The situation is further worsened by the fact that such women face a lack of support, both emotionally from their own families and financially as well. They may also experience domestic violence, social isolation, loss of social status, polygamy, and ostracized marital lives [21]. Women with infertility often experience societal rejection, shame, and ridicule and therefore are often seen as social deviants [22]. The rejection makes some of them withdrawn to themselves, depressed and some may experience suicidal ideation [22]. In Cameroon, most regions rely on farming for a living and children serve as a source of labor [23]. Therefore, couples are encouraged to have more children, particularly in the North and West Regions of Cameroon. Women who do not have children are highly stigmatized [24]. Infertility is particularly stressful for women because the treatment is stressful, costly, and without a warranty of success [25].

Although several studies have been conducted on the psychosocial effects of infertility among women in sub-Saharan Africa and elsewhere [22], in Cameroon however, little is known about the effects of infertility on women's mental health and women's social lives. The present study aimed to evaluate the sociodemographic characteristics and psychosocial effects of infertility among infertile women attending the outpatient consultation unit of (CHRACERH) Yaoundé, Cameroon. This study will help to fill the gaps in knowledge on the psychological and social consequences of infertility among infertile women in Cameroon and may also help stakeholders in Cameroon (Ministry of Health) in formulating programs on how to integrate the psychologists and social workers in the infertility team.

Materials and Methods
Study Design and Setting
This study utilized a descriptive hospital-based cross-sectional design with a quantitative data collection method from the 14th of March to the 6th of April 2023 at the outpatient consultation unit of CHRACERH (Hospital Center for Research in Endoscopic Surgery and Human Reproduction) Yaoundé. CHRACERH is a tertiary healthcare facility situated in the Ngousso Neighbourhood of Yaoundé, the capital city of Cameroon. CHRACERH is made up of a gynecological ward, a labor room with three beds, a neonatology unit, two theaters (one for Obstetrics / Gynecologic surgical procedures, and the other one for Assisted Reproductive Techniques), a laboratory unit, a blood bank, an emergency unit, and an outpatient consultation unit. The building of three floors is made up of specialized equipment to conduct its various mission including endoscopic surgery, *in vitro* fertilization, and pelvic reconstructive surgery.

Study Population
The study population comprised of consenting infertile women seeking gynecological consultation or those who were followed up

for infertility at the outpatient consultation unit of CHRACERH during the study period. Infertile women with psychiatric disorders or undergoing treatment for psychiatric disorders were excluded from study.

Sampling Method and Sample Size Calculation

The sample size was calculated using Cochran's formula for a cross-sectional study as follows: $n=z^2pq/e^2$

p= 11.2% proportion in the target population in Nigeria that was estimated to have psychosocial effects of infertility [22].
Z=1.96 at 95% confidence interval
e= 0.05 margin of error of 5%

therefore, $n=(1.96^2*0.112(1-0.112))/0.05^2 = 153$, giving a calculated minimum sample size of n=153 participants. We used a consecutive sampling technique where all women who met the inclusion criteria were enrolled for study during the data collection period.

Study Procedure

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Health Sciences at the University of Buea (Ref. No. 2023/193501/UB/IRB) and administrative authorization was obtained from the General Administrator-Director of CHRACERH Yaoundé. Participants were approached and explained the study design, risks, and benefits of study. Those who accepted to take part in the study signed a written informed consent form. The recruitment of study participants was carried out by the principal investigator from Monday to Friday during the data collection period.

Data collection was done using a structured questionnaire which was divided into 3 sections.

Section A: Sociodemographic characteristics of participants (age, parity, occupation, marital status, type of infertility, etc.).

Section B: Evaluation of psychological state of participants using GHQ-28. GHQ-28 is a self-report questionnaire developed in a few countries by Goldberg and Williams, in 1988 [26]. The GHQ-28 comprises 28 items and for each item there were four possible answers available: (1) not at all, 2) no more than usual, 3) rather more than usual, and 4) much more than usual; Some questions included for example," have you recently lost much sleep over worry". GHQ-28 identified four 7 items subscales with every sub-scale composed of 4 points Likert scale, scoring from 0, 1, 2, 3. The minimum score for the 28 version is 0 and the maximum is 84. Higher GHQ-28 scores indicate higher level of distress. Goldberg suggests that participants with total scores 23 or below should be classified as non-psychiatric, while participants with scores>24 may be classified as psychiatric or not healthy. Participants with sub-scale scores lower than 7, were healthy, scores between 7 and 14 were moderately healthy, and score more than 14 were not healthy [27]. The four sub-scale were as follows: Somatic symptoms (items 1-7), anxiety insomnia (items 8-14), social dysfunction (items 15-21), severe depression (items 22-28). Subscales here were used to identify the presence of psychiatric symptoms and not to diagnose psychiatric disorders.

Section C: To meet the objectives of the study and to address the context of the guiding literature, additional questions were formulated to capture necessary data on the psychological and social state of participants such as: "Which aspect of your life does infertility affect?"; "have you ever thought of killing yourself?" then answers were chosen according to each question.

Data Management and Analysis

Data was collected on a pretested questionnaires designed for this purpose. The data was entered into Microsoft excel spread sheet version 23 in a password protected computer. The data was then exported into SPSS version 25 for analysis. The data was screened for outliers, skewedness, and missing values. The missing values were not included in the final analysis. Descriptive statistics were used to present demographic data. Categorical variables were presented using frequencies and charts, whereas continuous variables were expressed as means and standard deviations.

To determine the prevalence of psychological disorders in participants, the CHQ-28 tool was divided into 7 categories with each category consisting of 7 questions. Questions 1-7, 8-14, 15-21 and questions 22-28 assessed somatic symptoms, social dysfunction, anxiety/insomnia, and severe depression respectively. In each category, those who had scores between 0-6 points were considered healthy, 7-14 moderately healthy and above 14 not healthy. The overall prevalence of mental disease was determined using all the 28 questions of the CHQ-28 which scores ranged from 0-84 with those with scores <24 considered psychological healthy or absence of mental disease and those with scores 24 and above considered having mental disorder.

A chi-square test was used to determine associations between the overall mental disorder, demographic and clinical characteristics. $P<0.05$ was considered statistical significance.

Results

A total of 210 infertile women presenting either for consultation or follow-up for infertility treatment were approached at the outpatient consultation unit of CHRACERH. Verbal consent was refused by 10 participants, and 200 participants were recruited of which 10 were excluded for not completing the questionnaire. Finally, 190 participants completed the study.

Sociodemographic Characteristics of Participants

The age range of participants was 22-60 years with a mean age of 39.52±7.64 years. There was a fair representation by age in the study though 31-40 years (42.9%) was a little higher than 41-50 years (37.9%) and the age brackets are mostly married (67.4%), of tertiary education (63.2%) and of the Christian religion (95.8%). Regions of origin were mostly represented by the Centre (30%) and West region (29.5%) (Table 1).

Table 1: Sociodemographic characteristics of participants.

Variables	Categories	Frequency	Percent (%)
Age group (years)	21-30	23	12.1
	31-40	80	42.1
	41-50	72	37.9
	51-60	15	7.9
	Total	**190**	**100**
Marital status	Divorced	6	3.2
	In a relationship	43	22.6
	Married	128	67.4
	Single	10	5.3
	Widow	3	1.6
	Total	**190**	**100**
Occupation	Housewife	33	17.4
	Private worker	54	28.4
	Public worker	66	34.7
	Student	7	3.7
	Trader	30	15.8
	Total	**190**	**100**
Educational level	None	1	0.5
	Primary	11	5.8
	Secondary	58	30.5
	Tertiary	120	63.2
	Total	**190**	**100**
Religion	Christian	182	95.8
	Muslim	5	2.6
	Others	3	1.6
	Total	**190**	**100**

Clinical Characteristics of Study Participants

Most study participants were childless (73.7%), and secondary infertility was higher (53.2%) than primary infertility (46.8%). There was a higher percentage (47.9%) of participants who felt that they were responsible for infertility while (30%) did not know how infertility came about. About (11.1%) of participants thought it was a couple problem or partner (7.9%) while a small minority (2.1%) thought it was from witchcraft and (1.1%) thought it was from a generational curse. Furthermore, only (2.6%) of participants declared a psychological problem resulting from infertility. In addition, the source of pressure for infertility was self (76.1%), husband (28.7%), and family. A small minority (9.6%) had pressure from friends. Most participants (93.7%) went to the hospital for infertility treatment while others (26.8%) sought help from a psychotherapist, (24.2%) from traditional healers, and (21.8%) went to the church for help.

The mean duration of pregnancy desire was 10.27±7.7 years, ranged from one to 40 years. Most participants (64.7%) had been infertile for 1-10 years, 24.7% for 11-20 years while 10.5% were infertile for over 20 years (Table 2).

Evaluation of Psychological Health Using CHQ-28

Mental health, particularly depression, is a serious illness affecting more of Africa as the years go by. It is greatly underdiagnosed and can lead to complications such as suicide and lack of economic input, mood changes, self-exclusion from society. Forty percent of participants in this study had some form of psychological disorder; 3.2% had somatic symptoms (mean score 5.67±3.79), 14.7% had anxiety/insomnia (mean score 7.92±5.39), 2.1% had social dysfunction (mean score (6.86±2.96) and 1.6% had depression (mean score 2.74±3.77 (Table 3).

Table 2: Clinical characteristics of study participants.

Variables	Categories	Frequency	Percentage (%)
Parity	More than one	12	6.3
	One	38	20
	Zero	140	73.7
	Total	**190**	**100**
Type of infertility	Primary	89	46.8
	Secondary	101	53.2
	Total	**190**	**100**
Cause of infertility	Both of us	21	11.1
	Me	91	47.9
	My partner	15	7.9
	No idea	57	30
	The curse	2	1.1
	Witchcraft	4	2.1
	Total	**190**	**100**
Diagnosed of a psychological problem due to infertility	No	185	97.4
	Yes	5	2.6
	Total	**190**	**100**
Source of pressure to get pregnant	Myself	143	76.1
	My husband	54	28.7
	My family	41	21.8
	My friends	18	9.6
	All of them	21	11.2
	Total	**277**	**147.3**
Treatment orientation	Hospital	178	93.7
	Traditional healers	46	24.2
	Physiotherapist	51	26.8
	Church	40	21.1
	All of them	12	6.3
	Total	**327**	**172.1**
Duration of infertility	1-10.	123	64.7
	11-20.	47	24.7
	>20	20	10.5
	Total	**190**	100

NB: Some items have multiple responses.

Table 3: Evaluation of psychological health using GHQ-28.

Variables	Categories	Frequency	Percentage (%)
Psychological disorder	Yes	76	40
	No	114	60
	Total	**190**	**100**
Somatic Symptoms	Healthy	129	67.9
	Moderately Healthy	55	28.9
	Not Healthy	6	3.2
	Total	**190**	**100**
Anxiety/Insomnia	Healthy	85	44.7
	Moderately Healthy	77	40.5
	Not Healthy	28	14.7
	Total	**190**	**100**
Social dysfunction	Healthy	90	47.4
	Moderately Healthy	96	50.5
	Not Healthy	4	2.1
	Total	**190**	**100**

Scores Depression	Healthy	164	86.3
	Moderately Healthy	23	12.1
	Not Healthy	3	1.6
	Total	**190**	**100**

GNQ: General Health Questionnaire

Social Effects of Infertility among Participants

Infertility has enormous social effects on women in Africa leading to stigma, isolation from society. In this study, 45.8% were sad because of infertility, and 35.8% were frustrated. A small percentage, 5.3%, were disappointed, 2.1% were anxious, 1.1% expressed guilt and 0.5% were angry with themselves. Furthermore, infertility affected the lifestyle of participants; joy (55.8%), sleep (7.4%), relationship with others (7.4%), mood changes (4.7%) and relationship with partner/couple (4.2%). In addition, most participants (97.9) expressed envy anytime they met with a pregnant woman (Figure 1).

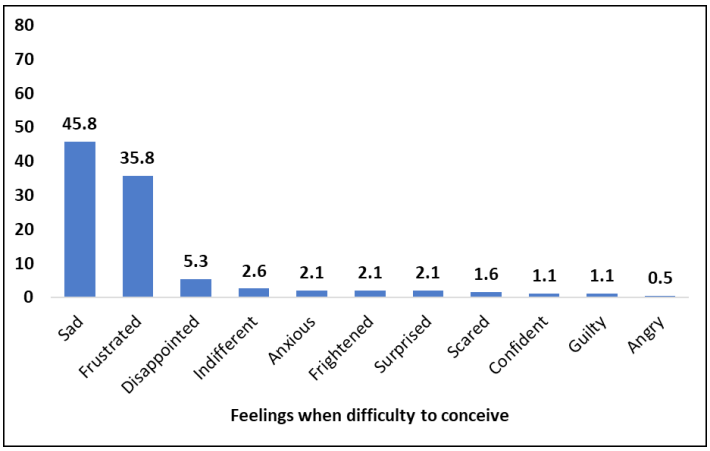

Figure 1: Feelings when having difficulty to conceive.

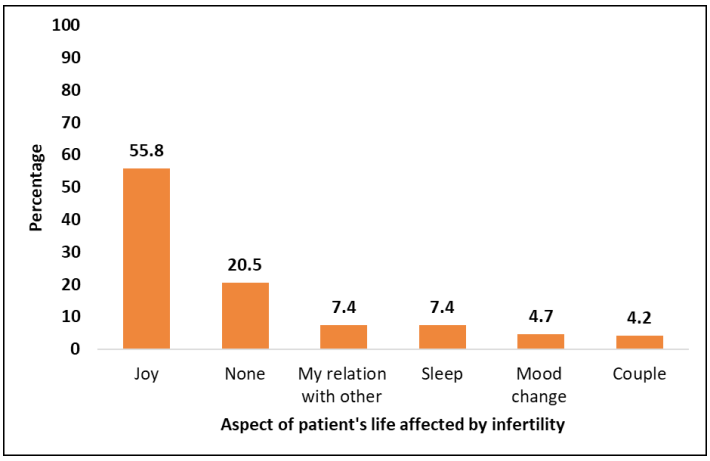

Figure 2: Aspect of patient's life affected by Infertility.

The fears of some infertile participants were staying alone (23.2%), leaving no descendants (12%), and losing husband/partner (12.6%). Other participants (5.3%) had thoughts of killing themselves while 33.2% sexual life was conditioned by the need to have a child. As regards infertility treatment failure, 78.4% felt disappointed, 14.7% were desperate, 3.7% were sad while partners put the blame of childlessness on the woman in 30.5% participants (Figure 2).

As shown in table 4, 29.5% participants usually have arguments with their partners because of childlessness and 36.8% fear separation/divorce while6.3% fear their husbands will take another wife and 5.3% fear their husbands will try to have children out of marriage. However, 51.1% of participants declared that their husbands have children out of wedlock. Besides, 74.2% feel guilty for not giving their husband a child while 55.3% have ever received insults because of infertility and 32.6% feel embarrassed to spend time with friends having children.

Table 4: Social effects associated with women suffering from infertility.

Variables	Categories	Frequency	Percent (%)
Has this problem ever created arguments with your partner	Never	118	62.1
	Offen	56	29.5
	Sometimes	16	8.4
	Total	**190**	**100**
what is the biggest fear regarding this problem	None	98	51.6
	Separation or divorced	70	36.8
	Take a mother wife	12	6.3
	Try to have children out of marriage	10	5.3
	Total	**190**	**100**
Does your husband have children out of marriage	No	88	46.3
	No idea	5	2.6
	Yes	97	51.1
	Total	**190**	**100**
Do you feel guilty for not giving your husband a child	No	48	25.3
	No because he is the cause	1	0.5
	Yes	141	74.2
	Total	**190**	**100**
Have you ever received insults due to this situation	No	85	44.7
	Yes	105	55.3
	Total	**190**	**100**
Embarrassed to spend time with friends having children.	No	128	67.4
	Yes	62	32.6
	Total	**190**	**100**

As shown in Table 5, we used the Chi square test to test for associations between demographic characteristics and psychological disorders among study participants. There was no statistically significant association p>0.05.

As shown in table 6, having consulted a psychologist/psychiatrist or mental health caregiver was the only clinical characteristic significantly associated with psychological disorders p=0.002.

Discussion

The present study aimed to evaluate the sociodemographic characteristics and psychosocial effects of infertility among infertile women attending the outpatient consultation unit of (CHRACERH) Yaoundé, Cameroon.

Table 5: Association between demographic characteristics and psychological disorder.

Variable	Category	n	Psychological disorder					
			Yes	%	No	%	Chi-square	p-value
Age (years)	21-30	23	10	5.26	13	6.84	1.721	0.423
	31-40	81	36	18.95	45	23.68		
	41-60	86	30	15.79	56	29.47		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Marital status	Divorced	6	2	1.05	4	2.11	1.055	0.901
	In relationship	43	19	10.00	24	12.63		
	Married	128	49	25.79	79	41.58		
	Single	10	5	2.63	5	2.63		
	Widow	3	1	0.53	2	1.05		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Type of marriage	Monogamy	114	45	34.62	69	53.08	0.401	0.527
	Polygamy	16	5	3.85	11	8.46		
	Total	**130**	**50**	**38.46**	**80**	**61.54**		
Educational level	None	1	0	0.00	1	0.53	4.381	0.223
	Primary	11	3	1.58	8	4.21		
	Secondary	58	29	15.26	29	15.26		
	University	120	44	23.16	76	40.00		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Occupation	Housewife	33	12	6.32	21	11.05	2.423	0.658
	Private worker	54	23	12.11	31	16.32		
	Public worker	66	28	14.74	38	20.00		
	Student	7	1	0.53	6	3.16		
	Trader	30	12	6.32	18	9.47		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		

Table 6: Association between clinical characteristics and psychological disorder.

Variable	Category	n	Psychological disorder				Ci-square	p-value
			Yes	%	No	%		
Parity	More than one	12	5	2.63	7	3.68	0.664	0.718
	One	38	13	6.84	25	13.16		
	Zero	140	58	30.53	82	43.16		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Have you been treated for a psychological problem due to infertility	No	185	72	37.89	113	59.47	3.423	0.064
	Yes	5	4	2.11	1	0.53		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Type of infertility	Primary	89	41	21.58	48	25.26	2.568	0.109
	Secondary	101	35	18.42	66	34.74		
	Total	**190**	**76**	**40.00**	**114**	**60.00**		
Have you ever met a psychologist/ psychiatric	No	181	68	35.79	113	59.47	9.409	**0.002**
	Yes	9	8	4.21	1	0.53		
	Total	190	76	40.00	114	60.00		
Duration of conception desire	1_10	123	50	26.32	73	38.42	0.517	0.772
	11_20	47	17	8.95	30	15.79		
	> 20	20	9	4.74	11	5.79		
	Total	190	76	40.00	114	60.00		

Sociodemographic characteristics of participants

The mean age of participants was 39.52±7.64 years (range 22-60 years). This finding is consistent with that reported by Olowokere et al. in Nigeria 35.0±6.14 [22], Omoaregba et al., in Nigeria 35.8±5.9 [28], Agostini et al., in Italy 36.5±2.8 [29], and Junie Ngaha et al. in Cameroon 32.3 ± 5.5 years but it is not consistent with the study in Sudan that reported a mean age of infertile females of 32.4 ±7.4 years [30]. Previous studies in Africa have shown that, one additional year of school curbs the probability of becoming a mother each year by 7.3 percent for women who have completed at least primary education, and 5.6 percent for women with at least a secondary degree [31,32]. A similar trend was reported in France where the average age at first pregnancy among females was about 30 years [33]. Besides, the level of schooling for girls is increasing in Cameroon, so women start motherhood much later. The mean duration of infertility was 10.27 years ± 7.90 years (range 1-40 years). This was not consistent with the findings of Ngaha et al., in Cameroon and El Hussein et al., in Sudan

and Olowokere et al., in Nigeria who reported mean duration of infertility of 4.0 ± 3.7 years, 4.9±3.9 years and 4.1±3.52 years respectively [22,28,30]. This could result from delays in seeking medical attention, a lack of competent healthcare providers (infertility specialists, psychologists, and sociologists) for optimal management, and financial impediments [28]. A higher proportion of participants (53.2%) had secondary infertility. This high rate of secondary infertility is like that reported by Adewumni et al. and Ogwu et al. in Nigeria (88% and 76.8%, respectively) and the 62.9% reported by Larsen et al. in Tanzania [34-36]. However, this is not in conformity with the 68.9% of primary infertility reported by Elhussein et al., [30]. Most of the participants, (63.2%) had done tertiary education, consistent with the 55.6% reported in Nigeria [22]. Having completed university education conferred participants with jobs that could earn them some income that would make them financially viable to pay for the expensive infertility treatments. In addition, it opens their minds to understand and accept infertility treatment or to seek care from hospitals rather than traditional remedies.

Psychological Effects of Infertility

Infertility for the Cameroonian woman is a havoc due to cultural and familial issues. Having children is every woman's dream in Cameroon of particular importance. Being childless can be so disastrous to women in Cameroon because it opens the way for husbands to go for another (or more) wives and this is common in our setting. This is a nightmare to the women and this socio-cultural pressure may lead the childless woman to develop psychiatric symptoms.

The mean (SD) total score of mental health in infertile women in this study was 23.2 ±11.85, in 40% of participants. This indicates a poor mental health status among these infertile women. The highest score was related to the subscale of anxiety (mean score 7.92±5.38 (14.7%)), and social dysfunction (mean score 6.86±2.96 (2.1%)), while the lowest score was for the subscale of depression (mean score 2.74±3.77 (1.6%)).

This findings were consistent with those reported by Hasanpour et al. in Iran where the highest score was related to the subscale of social dysfunction, and the lowest score was related to the depression subscale [34]. Possible reasons for these findings can be due to societal pressure and expectations of women for childbearing which most of the time is very distressing for women therefore, affecting their mental health and social life. However, this is not consistent with the study by Namdar et al. in Iran who reported that the highest score was related to the subscale of depression and the lowest to the subscale of somatic symptom [34]. However, they concluded that the general health of more than half of the infertile women indicated a degree of impairment [35]. This difference could be explained by the fact that, the Iranian study targeted only women with primary infertility while we studied women with both primary and secondary infertility. From these differences it may resort that, depression is more common among women with primary infertility meanwhile, anxiety may be common among women with both primary and secondary infertility. Other studies have revealed that anxiety is more prevalent in low-and middle-income countries than in high-income countries [36].

Social Effects of Infertility

The most common social effects identified in this study were 1) Mood changes; frustrated because of the difficulty to conceive (35.8%), their joy was impaired (55.8%) and Jealousy in the presence of a pregnant woman (97.9%). 2) Relationship changes; Sexual life was conditioned by the need for a child (33.2%), litigation with partner (29.5%), fear of divorce/separation (36.8%), husband having children out of marriage (51.1%), 3) Internal and external stigma; guilty not giving child to husband (74.2%), received insults for the situation (55.3), embarrassed to spend time with women having children (32.6%), and a small minority of them (5.3%) had thoughts of killing themselves (suicide ideation).

This is consistent with the study in Iran that classified the social effect of infertility into five categories: 1. Violence, including psychological and physical abuse in the home; 2. Marital instability or uncertainty; 3. Social isolation, which includes avoiding particular people and social gatherings as well as isolating oneself from family and friends; 4. Social exclusion and partial deprivation, which involves family members and relatives ignoring the infertile woman and reducing social interactions; and 5. social alienation [37].

Although there is a relative overpopulation in most low-income countries, including Cameroon, childlessness remains a major problem. In other tribes, like the Yoruba tribe in Nigeria, childless women cannot partake in the inheritance of their husband's property. In Cameroon and other African countries like Nigeria and Ghana, there is a similar trend [22,38-40].

Strengths of study

To the best of our knowledge, this is the first study in Cameroon evaluating the psychological and social effects of infertility among infertile women. In addition, the presence of a specialized unit for the management and follow-up of patients with infertility at the CHRACERH made it possible to have access to participants. Finally, this study has provided useful data that could be used by the Ministry of Public Health and other stakeholders to improve the psychological health and social lives of infertile women in Cameroon, as well as to set up further research on the subject.

Limitations of the study

This is a single-center study; therefore, the results obtained may not be generalized to the whole of Cameroon. The study population targeted only females, not taking into consideration the perspectives or experiences of infertile males or male partners.

Conclusion

Most of the study participants were in their late thirties and had anxiety, social dysfunction, and depression. Many of them had mood changes; frustrated because of the difficulty to conceive, their

joy was impaired and had feeling of envy anytime they meet with a pregnant woman. Furthermore, they had relationship changes; their sexual life was conditioned by the need for a child, they had problems with their partners, and feared divorce/separation, or husband having children out of marriage. In addition, they had internal and external stigma; were guilty not giving child to husband, received insults for the situation, embarrassed to spend time with women having children, and a small minority had thoughts of killing themselves.

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