



Depression Among Infertile Men in the Gaza Strip, Palestine: The Neglected Aspect of Fertility Care

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Abstract

Background: Infertility is a worldwide public health problem and affects psychological aspects of males' and females' life. However, the problem has not been well investigated in Palestine. Therefore, the purpose of this study was to determine prevalence and predictors of depression among infertile men in the Gaza strip.

Methods: A cross-sectional study was carried out among three hundred eighty five infertile males from January to December 2019. Participants were selected from three main in-vitro fertilization (IVF) centers following simple random sampling. The Arabic version of Beck Depression Inventory was used. Descriptive and inferential analyses were performed using the SPSS V22. Binary analysis was done to determine independent variables and t-test and one-way ANOVA were conducted afterwards. Logistic regression was performed to determine independent factors associated with depression symptoms. The p-value of 0.05 or less was considered statistically significant.

Results: Findings showed that 42.6% (164/385) of infertile men had at least one type of depression. Severe depression was presented in 16.6% (64/164) of participants, while 13.2% (51/164) and 12.7% (49/164) showed moderate and mild depression, respectively. Predictors for depression were duration of marriage (>8 years) (CI 95%: 1.099-2.615) and at least one IVF attempt (CI 95%: 0.373-0.873).

Conclusion: It has been revealed that depression is prevalent among infertile men. Marriage of long duration and several failures in IVF attempts are predictors for depressions. Psychological counseling besides medical interventions seems to be an optimal strategy to alleviate psychological distress associated with infertility.

Keywords: Depression, Infertility, IVF, Men, Palestine.

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Introduction

Infertility is the inability of a couple to conceive or failure to achieve clinical pregnancy after one year of regular unprotected sexual intercourse. It is a public health problem which affects approximately 15% of couples at repro-

ductive age (1, 2). Males' infertility is mainly diagnosed through seminal analysis; however, the etiology is complex and may include genetic factors, endocrine disorders, varicocele, sexual dysfunction, and other causes (3).

The impact of infertility on males seems to be comprehensive and is not only restricted to general quality of life. It extends to sexual and psychosocial aspects of infertility including relational, marital, and family life (4-7). Moreover, there is the risk of developing psychological distress (8).

Psychological distress including depression is frequently reported in men (9). Factors such as inability to conceive for a long period, concerns around the cause of infertility, financial worries, pressure from partners, family, peers, and community, aging and uncertainty of treatment success pose a psychological burden on infertile couples and aggravate existing psychological symptoms (10, 11).

Previous research shows variation in the prevalence of depression among infertile men which ranges from 5.1% to 20.8% (12-15). The lowest prevalence was reported in Volgsten et al.'s study (2008) in a Swedish infertile cohort and the highest prevalence was shown in Yang et al.'s (2017) study among Chinese men. Many risk factors of depression among infertile men were discussed in literature. Psychological symptoms as depression and anxiety were widespread in infertile males with longer duration of infertility (12), age over 30, lower levels of education (14), and previous attempts for infertility treatment (13).

In Palestine, there is lack of evidence about prevalence of infertility in men. One study was carried out in villages of Hebron, Palestine, among 207 newly married couples and continued for two years in which the rate of infertility was reported to be 13.4% (16). To our knowledge, no previous research was conducted to assess the psychological condition of infertile males in the Palestinian society. Therefore, the prevalence and predictors of depression among infertile males in the Gaza strip were all assessed in this paper.

Methods

Study design and setting: This is a descriptive analytic cross-sectional study conducted in three main IVF centers in Gaza city from January 10 to December 25, 2019. Totally, there are eight infertility clinics and the majority of them are located in Gaza city. Three main infertility clinics were purposefully selected. Moreover, the included clinics provide IVF services with advanced technologies. The three selected centers were Al-Helo, Hindawi and Al-Basma infertility treatment centers.

Study sample: The sample of the study included all men and their wives who sought IVF service in

the three selected infertility centers. Inclusion criteria were willingness to participate, the ability to communicate orally and fill the questionnaire individually, living in Gaza strip, and suffering from primary or secondary infertility. There was no restriction with respect to age of patients and their education level. Males with previous history of depression or any mental disorders and the patients who were unwilling to participate in the study were all excluded. The lists of infertile males under IVF treatment were obtained from each center. Simple random sampling was used to select the participants. It was assumed that the proportion of infertile males with depression was 50% since the prevalence of depression among infertile males in Palestine was unknown to us. The sample size equaled 385 and non-response rate was 10%; therefore, the final sample size was calculated to be 422. Finally, 385 infertile males agreed to participate.

Study instrument: First, socio-demographic information and infertility history of participants were collected and then their depression was measured by the Arabic version of the Beck Depression Inventory (BDI) (17). Cronbach alpha ranged between 0.79-0.88 and the test re-test reliability coefficient ranged between 0.74 and 0.77. Validity was measured using concept validity which showed coefficients ranging between 0.19 to 0.87. The Arabic version of BDI includes 21 items measured on a 4-point Likert scale. The answers range from "0" that indicates no depression, to "4" for severe depression, and overall score ranges from 0-63. The BDI scores are classified as no depression (Score 0-13), mild (Scores 14-19), moderate (Scores 20-28), and severe depression (Scores 29-63).

Data collection: Three well trained midwives who were familiar with research goal and experience in similar researches were involved in data collection. Moreover, the three trained midwives, who were former staff of selected centers, explained the purpose of the research to selected participants and they were available for any questions raised during filling the survey. Data were collected through a self reported questionnaire. Illiterate men filled the questionnaire with complete support of the trained midwives, yet, without any slight indication or hint. Each midwife had a list of couples visiting the IVF center for fertility management. She introduced herself to randomly selected males and provided details and stated the objective of the project and the procedure of their random selection. Moreover, anonymity and vol-

untary participation were ensured, and thus majority agreed to participate. Formal permission was obtained from infertility center management and written consent was obtained from each participant. Ethics approval for this study was granted by the Palestinian Health Research Council, Helsinki Committee (PHRC/HC/277/17).

Data analysis: Data were analyzed using the SPSS V22 (IBM, USA). Continuous variables were presented by mean and standard deviation and categorical variables were presented as frequency and percentage. Bivariate analysis was conducted to select independent variables for multivariate logistic regression. One-way ANOVA and a post-hoc test (Bonferroni) were used to determine the effect of independent variable on dependent variables (Depression). All independent variables with a $p \leq 0.05$ were chosen for a multiple logistic regression analysis. In logistic regression, independent variables with $p \leq 0.05$ were considered as predictors for depression.

Results

Characteristics of study participants: The mean age

of men, years of marriage, and infertility duration \pm SD were 34 ± 8.4 , 8.1 ± 5.9 and 5.8 ± 4.7 years, respectively. Most males had average income of less than 1000 NIS and 14.3% of them were polygamy. About one third of them were jobless (24.9%) and 37.1% had primary infertility. Male factor infertility was presented in one third of males (132/385).

Prevalence and severity of depression: According to the results, 42.6% (164/385) of the participants had one type of depression. Specifically, 16.6% (64/164) had severe depression, 13.2% (51/164) had moderate depression, and 12.7% (49/164) had mild type of depression.

The frequency of depression: Frequency of depression symptoms increased with various independent variables. Improved education level, infertility type, duration of infertility, age and male factor infertility were correlated with increased frequency of depression symptoms but the correlation was not significant ($p > 0.05$). Marital duration (> 8 years) and at least one failed IVF cycle were significantly associated with increased frequency of depression symptoms ($p < 0.0001$) (Table 1).

Table 1. Distribution of men with depression and independent variables

No.	Variables	No depression	Mild depression	Moderate depression	Severe depression	p-value	
1	Age	35 or less	138	35	29	36	0.322
		Over 35	83	14	22	28	
2	Job	Have job	173	30	38	48	0.452
		Jobless	48	19	13	16	
3	Education	Primary and illiterate	79	20	21	24	0.607
		University or higher	142	29	30	40	
4	Income (NIS)	1000 and less	128	34	34	37	0.358
		More than 1000	93	15	17	27	
5	Polygamy	Yes	37	2	9	7	0.319
		No	184	47	42	57	
6	Infertility categories	Female	41	6	5	6	0.283
		Male	69	20	26	17	
		Both	45	6	8	20	
		Unknown	66	17	12	21	
7	Marital duration	Less than 8 years	151	35	29	22	$p < 0.0001$ *
		Over 8 years	70	14	22	42	
8	Infertility duration	Less than 5 years	132	26	27	36	0.433
		Over 5 years	89	23	24	28	
9	Previous IVF attempts	Yes	170	34	43	45	0.600
		No	51	15	8	19	
10	Frequency of IVF attempts	1 or less	128	26	27	14	$p < 0.0001$ *
		More than 1	93	23	24	50	
11	Infertility type	Primary	79	18	15	31	0.220
		Secondary	142	31	36	33	

* One-way ANOVA, post-hoc test

Table 2. Binary logistic regression

No	Variables	Category	B	S.E.	Wald	df	Sig.	AOR	CI	
									Upper	Lower
1	Previous IVF attempts	1 or less †								
		Over 1	-0.561	0.217	6.678	1	0.010 *	0.571	0.373	0.873
2	Marital duration	8 years or less †								
		Over 8 years	0.528	0.221	5.707	1	0.017 *	1.696	1.099	2.615
	Constant		-0.758	0.365	4.305	1	0.038	0.469		

* p<0.05, df: degree of freedom, CI: Confidence Interval, † Reference category, AOR: Adjusted Odds Ratio

Depression in infertile women: Independent variables as predictors associated with depression were duration of marriage (>8 years) (p=0.017) and history of at least one IVF attempt (p<0.010) (Table 2).

Discussion

The purpose of this study was examination of the prevalence of depression among infertile men in Palestine. Fertility is a vital issue for men's marital and sexual life and thus infertility could be a source for mental and psychological disorder in their life time (18). Infertility influences psychological well-being, relationship satisfaction, and self-esteem (19). Moreover, the influence on men's life may extend to cause somatization disorders and social dysfunction (20, 21). Depression among infertile men is a neglected health issue among Arab health researchers in field of reproduction and mental health. In fact, few researches examined the prevalence and predictors for depression among infertile men (22).

Depression is a disorder that can be presented with sleep and anxiety disorders (23). Published research has shown the effect of infertility on mental and psychological well-being of the infertile couples and particularly men (24, 25).

The present study is the first research on assessment of the prevalence and predictors of depression among infertile men seeking IVF treatment. Major depression with rate of 42.6% was prevalent in our study. This rate is higher than results from previous research conducted in Sweden (15, 26, 27), China (12, 28, 29), Italy (13) and in Iran (22). Possible explanation could be attributed to application of various instruments to determine prevalence of depression; in some countries, Mental Health Inventory-5 and modified version of the PRIME-MD PQ were used.

Duration of marriage is a significant predictor for occurrence of depression as Chinese reports similarly confirm this finding (28, 30, 31). How-

ever, different results were obtained by a Chinese study carried out by Yang et al. (12) and another study in Turkey (32). It seems that variations in socio-demographic characteristics of the study participants who held different cultural values and beliefs would affect their mental and psychological response to infertility.

Number of IVF attempts imposes far too much stress over infertile men who seek IVF treatment. This finding is not in line with Chiaffarino et al.'s (13) findings who showed that depression symptoms are more likely to appear in the first IVF treatment. Possible explanation can be inferred from the differences in tolerance of stressful events during IVF process and capability to show or hide the psychological stress.

Though the study was carried on participants from three main fertility centers, it faces many limitations; first, the study included only infertile males who sought IVF treatment at infertility treatment centers, yet, there were infertile men who could not afford such treatments which underpins the assumption that depression rate would be much higher in reality. In fact, the sample size could be increased by enrolling such population to generalize the findings. Second, the conservative culture of Palestinian community sometimes makes it hard to ask questions about infertility and sexual function. Third, the nature of cross-sectional design limits establishment of causal inferences based on study variables. Finally, using self-reporting questionnaires restrict the in-depth exploration of psychological conditions like distress and depression.

Conclusion

Infertility has negative consequences for psychological well-being of males' population. It nearly affected the half of the male participants. Duration of marriage and frequency of IVF attempts are predictors of occurrence of depression symptoms. Most psychological relief programs in Palestine

are targeting infertile women; thus psychological condition of their counterpart men remains a neglected problem. The Palestinian mental and psychological health care providers should pay attention to infertile men and they should be screened for depression. Moreover, the groups vulnerable to higher risks of depression should be the main focus of health care system. Further researches must be carried out to explore other risk factors for depression among infertile men and how IVF outcomes may affect men's mental health.

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Conflict of Interest

The authors declare that they have no competing interest.

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