

Evaluation of Psychiatric Disorders, Personality Characteristics and Intelligence Quotient Among Oocyte Donor Candidates: A Cross-Sectional Study in a Large Referral Hospital

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Article Info

doi [10.30699/jogcr.8.5.464](https://doi.org/10.30699/jogcr.8.5.464)

Received: 2022/09/17;

Accepted: 2022/12/24;

Published Online: 09 Sep 2023;

Use your device to scan and read the article online



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ABSTRACT

Background & Objective: Oocyte donation is an assisted reproductive technique. The infertile couples' demand for using this technique has increased in recent years. This study aimed to evaluate psychiatric disorders, personality characteristics and intelligence quotient among women who are candidates for oocyte donation.

Materials & Methods: This was a cross-sectional study. Thirty-nine parous women were entered into the study. A psychiatrist interviewed participants regarding the psychiatric axis I disorders. Also, participants were asked to answer the Millon Clinical Multi axial Inventory (MCMI III) and Raven's Standard and Progressive Matrices (RSPM).

Results: The mean age of participants was 28.79 (SD = 4.1) years and it was 11.17 years (SD = 2.6) for education. The mean of donation frequency was 1.35 (SD = 0.6). Twenty-one donors (53.8%) had only financial motivation and eleven (28.2%) had only altruist object. Twenty-eight (71.8%) women did not have any psychiatric axis I disorders while eight women (20.5%) had at least one disorder. Eleven participants (28.4%) suffered from at least one personality disorder. The mean intelligence quotient was 99.3 (SD = 14.2).

Conclusion: The results showed that oocyte donors might suffer from mental disorders and intelligence quotient problems irrespective of age, education, job status and motivation for donation. In conclusion, it seems that psychological assessment and help service is necessary for oocyte donors before any donation procedure.

Keywords: Mental Health, Personality, Intelligence, Oocyte Donation



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Introduction

Infertile couples, who cannot have children through autologous oocyte, usually demand for oocyte reception. As such, oocyte donations have increased in recent years (1). Studies have shown that women have various reasons for donation. Two main reasons were financial gain (2) and altruism (3, 4).

A few studies have conducted to examine psychiatric and psychological characteristics of donors beforehand (5-7). It is argued these are important issues that might affect the outcomes. For instance, when a donor suffers from a poor personality or psychiatric disorders, then the genetic transfer of such characteristics to the recipient and her fetus is likely. Meanwhile, a previous

study has shown that the mental health concerns are the main reason for rejection of an oocyte donor (8).

Also, Oocyte donation might have physical and psychological side effects mainly caused by the medications involved in an ovarian stimulation protocol. Physical complications include ovarian hyper-stimulation syndrome, infection and ovarian torsion (9) and psychological side effects include irritability, mood lability, and depressed mood (10) increased depressive (11) and significantly increased anxiety and hypochondriasis (5). Besides, donors might be under a social stigma for oocyte donation because of socio-cultural taboos, particularly in traditional societies (12). Therefore, evaluation of the

psychiatric features of women who are candidates for oocyte donation is important.

In a study from Iran, Adib Moghaddam et al. showed in order to design a mental health program for oocyte donors, it is necessary that the donor's experience throughout the process of donation should be assessed and also, for increasing its effectiveness, their social and cultural context be considered (13).

To the best of our knowledge, the information on women who are candidates for oocyte donation is scarce. Therefore, to prevent the complication of oocyte donation procedure this study aimed to evaluate psychiatric disorders, personality characteristics and intelligence quotient among oocyte donors.

Methods

Study design and participants

This was a cross-sectional study of a sample of women who intended to donate oocytes. Thirty-nine parous women were referred from a reproductive clinic of a teaching hospital affiliated to Tehran University of Medical Sciences to a psychosomatic clinic for mental health evaluation, during February 2018 to January 2021. Women who had inclusion criteria were entered into the study. The inclusion criteria were: having Iranian nationality and identification documents, physical health, having at least one healthy child, no history of miscarriage, no history of infectious diseases such as Acquired Immune Deficiency Syndrome (AIDS), and hepatitis, no addiction, number of donations should not be more than three times and having informed consent to contribute in the study with catching fingerprints.

Measures

1. Demographic and donation history: A self-designed questionnaire was used to collect data on patients' demographic information such as age, education, number of children, marital status, and employment as well as the number of donations and motivation for it.

2. Psychiatric assessment: psychiatric disorders were assessed using the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (14). All participants, were interviewed by a psychiatrist for evaluation of psychiatric disorders.

3. The Millon Clinical Multi axial Inventory (MCMI-III): The MCMI is a comprehensive self-report

personality assessment measure. The MCMI-III is developed to classify clinical symptoms based on the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000). The test contains of 175 true-false items that describes personality characteristics and clinical symptoms (15, 16). The reliability and validity of the Iranian version of MCMI-III are well shown (17).

4. Raven's Progressive Matrices (RPM): The RPM is a general measure of human intelligence. It contains 60 multiple choice questions, listed from simple to difficult items. This format is considered to measure the reasoning ability, the educative element of Spearman's g . In each test item, participants are requested to recognize the missing component that completes a pattern. Many patterns are offered in the arrangement of a 6×6 , 4×4 , 3×3 , or 2×2 matrix (18). The Iranian version of Raven's progressive matrices showed significant validity and reliability (19).

A psychologist assessed all participants.

Statistical analysis

We used the SPSS software (version 23, IBM, USA) for data analyzing. Descriptive statistics including means, standard deviations, frequencies and percentages were used to explore the data. Also, the independent samples t-test, chi-square, and Fisher's exact test analyses were conducted for comparing age, education, employment, IQ, and motivation of donation between women suffering from psychiatric or personality disorders and healthy women.

Ethical consideration

The Review Board of the Tehran University of Medical Sciences approved the study (IR.TUMS.IKHC.REC.1396.4876).

Results

The mean age of participants, was 28.79 (SD = 4.1) and it was 11.17 years (SD = 2.6) for education. The mean of donation frequency was 1.35 (SD = 0.6). Thirty-five donors (89.7 %) were married and four (10.3 %) divorced. Twenty-nine (74.4 %) donors were unemployed. Twenty-one donors (53.8 %) had only financial motivation and eleven (28.2 %) had only altruist object. Seven donors (17.9 %) had both motivations of financial gain and altruist behavior. Demographic characteristics of oocyte donors are shown in Table 1.

Table 1. The characteristics of the participants

	Mean (SD)	No. (%)
Age	28.79 (4.1)	
Education (years)	11.17 (2.6)	

	Mean (SD)	No. (%)
Job status		
Employed		10 (25.6)
Unemployed (housewife)		29 (74.4)
Marital status		
Married		35 (89.7)
Divorced		4 (10.3)
Number of donations	1.35 (0.6)	
First donation		28 (71.8)
Second donation		8 (20.5)
Third donation		3 (7.7)
Motivation for donation		
Financial		21 (53.8)
Altruistic		11 (28.2)
Both		7 (17.9)

Psychiatric assessment

Twenty-eight (71.8 %) women did not have any psychiatric axis I disorders while eight women (20.5 %) had at least one disorder. The most frequent disorder was obsessive compulsive disorder (n = 4, 10.3%). Other frequent disorders were major depressive disorder (n = 2, 5.1 %), persistent depressive disorder (n = 2, 5.1%), anxiety disorders (n = 1, 2.6 %), mixed depressive-anxiety disorder (n = 1, 2.6 %), and adjustment disorder (n = 1, 2.6 %) respectively. Three donors had two psychiatric axis I disorders simultaneously. The results obtained from descriptive analysis are shown in Table 2.

Personality assessment

Nearly half of participants (n = 19, 48.7 %) did not have any problem regarding personality. Eleven participants (28.4 %) suffered from at least one personality disorder and nine women (23.2%) from at least one personality trait as assessed by the Millon Clinical Multiaxial Inventory ([Table 2](#)). The most

frequent personality disorder was obsessive compulsive (n = 4) and histrionic (n = 4, 10.3%) personality disorders. Depressive (n = 1, 2.6%), thought disorder (n = 1, 2.6%) and narcissistic (n = 1, 2.6%) were other personality disorders. Compulsive (n = 4, 10.3%) and histrionic (n = 3, 7.7%) traits had the highest frequency. Other personality traits were depressive, borderline, negativistic, and narcissistic that observed with one (2.6%) frequency. ([Table 2](#)). One donor had three personality disorders (depressive, histrionic and thought disorder) and traits (depressive, borderline and negativistic) simultaneously.

Intelligence quotient assessment

The mean intelligence quotient as measured by the Raven's Progressive Matrices was 99.3 (SD = 14.2). Seven women were lower than average of intelligence quotient, five women had borderline, sixteen were average, nine and two women were higher than average and very higher than average, respectively ([Table 2](#)).

Table 2. Psychiatric and personality assessment

	No. (%)
Axis 1 Psychiatric disorders assessment	
Normal	28 (71.8)
Obsessive compulsive disorder	4 (10.3)
Anxiety disorders	1 (2.6)
Mixed depressive-anxiety disorder	1 (2.6)
Major depressive disorder	2 (5.1)
Persistent depressive disorder	2 (5.1)

	No. (%)
Adjustment disorder	1 (2.6)
Personality assessment	
Normal	19 (48.7)
Personality disorder	
Compulsive	4 (10.3)
Histrionic	4 (10.3)
Depressive	1 (2.6)
Thought disorder	1 (2.6)
Narcissistic	1 (2.6)
Personality trait	
Compulsive	4 (10.3)
Histrionic	3 (7.7)
Depressive	1 (2.6)
Borderline	1 (2.6)
Negativistic	1 (2.6)
Narcissistic	1 (2.6)
Intelligence quotient assessment (mean, SD)	99.3 (14.2)
Borderline (71-80)	5 (12.8)
low average (81-90)	7 (17.9)
Average (91-110)	16 (41)
high average (>110)	9 (23)
very high (>120)	2 (5.2)

Comparing age, education, job status, intelligence quotient and motivation for donation

The results obtained from t-test and chi-square analyses are shown in [Table 3](#). There were no significant differences between women were suffering

from personality or psychiatric problems and healthy women in age ($P = 0.62$), and education ($P = 0.72$). Also, no significant differences observed between two groups in job status ($P = 0.39$), motivation for donation ($P = 0.79$), and Intelligence quotient ($P = 0.66$).

Table 3. Comparing the means of age, education, job status, motivation for donation and IQ

	personality assessment		P	Axis I Psychiatric disorders assessment		P
	Healthy (n=19)	Suffered (n=19)		Healthy (n=27)	Suffered (n=8)	
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Age	28.5 (4.3)	28.5 (3.7)	1.00*	28.7 (4.2)	29.1 (3.2)	0.83*
education	10.7 (3.2)	11.5 (2.1)	0.38*	10.9 (2.8)	12.2 (2.8)	0.26*
	N. (%)	N. (%)		No. (%)	N. (%)	
Job status			0.44**			0.39**
Employed	6 (66.7)	3 (33.3)		9 (90)	1 (10)	
Unemployed	13 (44.8)	16 (55.2)		18 (72)	7 (28)	

	personality assessment		P	Axis 1 Psychiatric disorders assessment		P
	Healthy (n=19)	Suffered (n=19)		Healthy (n=27)	Suffered (n=8)	
Motivation for donation			0.80***			0.79***
Financial	9 (45)	11 (55)		15 (78.9)	4 (21.1)	
Altruistic	6 (54.5)	5 (45.5)		8 (80)	2 (20)	
Both	4 (57.1)	3 (42.9)		4 (66.7)	2 (33.3)	
Intelligence quotient			0.72**			0.66**
Average and more	14 (53.8)	12 (46.2)		20 (80)	5 (20)	
Below Average	5 (41.7)	7 (58.3)		7 (70)	3 (30)	

* Derived from independent t-test

** Derived from Fisher's exact test

*** Derived from chi-square

Discussion

Infertility is an essential global reproductive disorder that affects many aspects of human beings' life (20). Oocyte donation is an assisted reproductive technique. The study findings showed that a number of oocyte donors suffer from mental problems. We used rigorous measures and believe that the findings could be very important for health care providers. However, a study using the 28-item general health questionnaire among oocyte donors in Iran found that mental health sub-scores was in the normal range (5). Perhaps the type of evaluation or sampling might explain the different findings.

The current study indicated that 28.4% of participants suffered from at least one personality disorder and 23.2% of women suffered from at least one personality trait. Obsessive compulsive disorder with 10.3% was the most reported condition which was higher than the general population (6.8 %), and another study (21, 22).

Women who had mental problems treated and followed by psychiatrist or psychologist as needed and who had significant mental problems were forbidden from oocyte donation. Similarly, a study has shown 11 percent of donation process ruled out for personality problems that were diagnosed by the Minnesota Multiphasic Personality Inventory (23). Another study indicated that the self-concept of oocyte donors was poor. They concluded only in addition to the physical assessment, psychological evaluation and follow up is necessary to be considered (24). Meanwhile, a study has shown that oocyte donors have better personality characters than the controls (25).

This study showed that the intelligence quotient of the majority of donors has been at an average level. However, almost 30 percent of participants were in blow the average or were at borderline. Regarding high financial motivation, this could be due to low socio-economic background of donors and is an important in

terms of genetic inheritance. Previous studies have emphasized that the genetic connection in donor assisted conception should be more carefully considered (26).

The results indicate that the majority of donors had financial motivation and altruistic motives were second reasoning for donation while quantitative studies have shown that altruistic motives were 96-100% (27, 28) and the close relationship between the recipient and the donor was a reliable motivation among known donors (29, 30). Also, Platts et al. in a systematic review identified that altruism, financial motivation, and experience of friends' fertility problems are three key themes as influencing the donation decision (31).

The findings have shown the age of the majority of donors tend to be under 30, similarly to other studies (5, 24, 27). Also, the results indicated that 89.7% of oocyte donors were married and 10.3% divorced that is consistent with other studies (32-34).

Limitations and strengths

This study had some strengths. To the best of our knowledge, it is the first study that assesses mental health including axis 1 psychiatric disorders assessment by psychiatric interview, personality characteristics and intelligence quotient simultaneously among oocyte donors in Iran. Also, donors who had mental health problems received therapy and followed up. The study limitations could be summarized as follows. Firstly, due to special conditions caused by the COVID-19 pandemic a number of women could not participate in the study. Secondly, we used convenience sampling which limits the generalizability of the findings. Finally, we did not evaluate anonymous donors. Future studies are recommended with post donation assessment and other interfering variables.

Conclusion

The results showed that oocyte donors might suffer from mental disorders and intelligence quotient problems irrespective of age, education, job status and motivation for donation. Regarding the possibility of genetic inheritance of psychiatric disorders and intelligence quotient it seems that psychological assessment and help service is necessary for oocyte donors before any donation procedure.

Acknowledgments

We appreciate all donors who contributed to this study.

Funding

This study has been supported by Tehran University of Medical Sciences and Health Services; Grant number 21782.

Conflict of Interest

The authors declare that they have no competing interests.

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How to Cite This Article:

Sharafi, S. E., Hajibabaei, M., Keikha, F., Montazeri, A. Evaluation of Psychiatric Disorders, Personality Characteristics and Intelligence Quotient Among Oocyte Donor Candidates: A Cross-Sectional Study in a Large Referral Hospital. J Obstet Gynecol Cancer Res. 2023; 8(5):464-71.

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