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A Psychological Analysis of Iranian Infertile Couples' Attitudes Toward Gestational Surrogacy: A Cross-Sectional Study

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Keywords: assisted reproductive technology | attitude | gestational surrogacy | infertility

ABSTRACT

Background and Aims: In the last two decades, assisted reproductive technologies (ARTs), such as surrogacy, have helped couples address infertility. However, the use of these techniques can present moral, social, and psychological challenges for both the infertile parents and the surrogate mother. Therefore, this study investigates the attitudes of infertile couples toward surrogacy and the associated challenges.

Methods: This cross-sectional survey was conducted on 176 infertile couples. Data were collected using a bifurcated questionnaire that assessed the challenges and concerns of infertile couples regarding surrogacy. The data were analyzed using SPSS version 22 statistical software.

Results: The average attitude score toward surrogacy was 92.93 ± 4.89 , with no significant differences between females and males. The results of the five distinct subscales indicated that with increasing education levels, intentional attitudes and future perspectives on surrogacy decreased ($b = -0.59$, $p = 0.02$) and the score for children born through surrogacy decreased significantly ($b = -0.60$, $p = 0.04$). Additionally, there was a significant relationship between the history of ART and the overall acceptance of surrogacy ($b = 1.6$, $p = 0.002$).

Conclusion: These findings are important as they highlight the attitudes of infertile couples in Iranian society toward surrogacy. It appears that providing adequate education to society will significantly facilitate the optimal use of this treatment method.

1 | Introduction

According to World Health Organization statistics, 10%–15% of couples in the world suffer from infertility problems [1].

However, over the past two decades, assisted reproductive technologies (ARTs) such as surrogacy have helped couples resolve infertility issues [2]. Surrogacy has been mentioned since ancient times. The first surrogacy contract was signed in

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1980; and the first successful surrogacy pregnancy occurred in the United States in 1985 [3]. In the surrogacy method, as a type of assisted reproduction, infertile couples need the participation of a third person as a “surrogate mother” to use the surrogacy method, and she is required to undergo an embryo transfer and carry the fetus until birth and deliver it to the intended parents after birth [4]. Surrogacy is based on the source of the oocyte and is divided into two methods: the first method is traditional surrogacy, in which the surrogate mother’s egg is used and artificially fertilized with the sperm of the donor or intended father. The second method is gestational surrogacy, in which the surrogate mother receives an embryo that was created through in vitro fertilization (IVF) from the germ cells of the genetic parents; therefore, she is not genetically related to the child to be born [3]. Although surrogacy, as one of the ART, can help many infertile couples, it is among the most controversial approaches to treating infertility, which is associated with challenging social, psychological, and moral problems [5, 6]. Studies have indicated that people’s decisions about surrogacy are influenced by their cultural values, such as ethical, religious, and philosophical beliefs and customs, which are frequently connected to moral and social ramifications. As such, disparate trends in attitudes may result from the various facets of surrogacy [3, 7]. Furthermore, since there is no universal legal framework for surrogacy, various national laws govern the practice differently. While surrogacy is illegal in Austria, Norway, Germany, France, and Sweden, it is legal in many European countries like Belgium, the Netherlands, and Finland; however, its commercial form is prohibited in England, Denmark, the Netherlands, and Australia [3, 8]. Studies conducted in different countries on people’s general views on surrogacy have shown conflicting results, although opinions about surrogacy and infertility have changed over time [9]. Stenfelt et al. [10] showed that 63% of doctors working in obstetrics were positive or neutral about supporting altruistic surrogacy in Sweden. An analysis by Mousavi et al. [9] demonstrated that surrogacy was viewed more favorably in Iran, in contrast to Turkey and Japan. Another review showed that surrogacy is widely accepted in countries such as Iran, Canada, Japan, and the United Kingdom. Nevertheless, Germany has a lower acceptance rate for surrogacy [11]. The results of the studies show that opinions about surrogacy differ from nation to nation and can be influenced by several variables, including age, gender, and socioeconomic status. In addition, the media’s positive or negative attitude toward the issue, as well as cultural beliefs, shapes the opinion of the general public [3]. In Iran, the results of studies in different cities were contradictory given the vastness and cultural and ethnic diversity, so much so that research conducted by Mahmoodian et al. [12] in Shiraz showed that 73.5% of infertile women had a negative attitude toward surrogacy. In contrast, in a similar study in Qom, 61.3% of infertile women had a positive attitude toward surrogacy [13]. The city of Kermanshah in Western Iran is one of the most culturally, ethnically, and religiously diverse cities in Iran. However, no study has been conducted in this city on the opinions of infertile couples on surrogacy and whether they consider this assisted reproductive method to be satisfactory or not. Hence, the present study aimed to examine the attitudes of infertile couples toward surrogacy.

2 | Materials and Methods

2.1 | Study Design

This study was a cross-sectional survey conducted from July 2023 to December 2023 [14]. It was meticulously designed and reported by the guidelines outlined in the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement [15].

2.2 | Sample and Sampling Method

The study involved infertile couples who sought treatment at Motazedi Hospital’s infertility center. This hospital is an infertility center in the west of Iran, in Kermanshah. The sample size for this study was determined based on the findings of Mustafa [16]. Allowing for a Type I error of 5% and assuming a recruitment accuracy of 20%, the required sample size was calculated to be 165 individuals. To account for an estimated 7% dropout rate, the sample size was further increased to 176 participants.

$$p = 0.18$$

$$d = 0.05$$

$$Z_{1-\frac{\alpha}{2}} = Z_{1-\frac{0.05}{2}} = Z_{0.975} = 1.96$$

$$n = \frac{(Z_{1-\frac{\alpha}{2}})^2 \times P(1-P)}{(d)^2} = \frac{(Z_{0.975})^2 \times 0.18(1-0.18)}{(0.05)^2}$$

$$n = \frac{(1.96)^2 \times (0.147)}{(0.05)^2} = \frac{(3.84) \times (0.147)}{(0.0025)} = \frac{(0.478)}{(0.0025)} = 226$$

$$n \geq 297$$

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{297}{1 + \frac{267 - 1}{600}} = 165$$

$$n \geq 165$$

Sampling was conducted using a convenience sampling method, and the inclusion criteria were a willingness to participate in the study and a history of infertility of at least 1 year. Incomplete questionnaire responses were used as the exclusion criterion for the study samples. The present study focuses on gestational surrogacy, where the surrogate mother carries the fetus conceived through IVF using the intended parents’ gametes. This type of surrogacy, in which the surrogate has no genetic relationship with the child, is the most common form in countries where surrogacy is legally permissible, including Iran.

2.3 | Study Instruments

The instrument used for data collection was a bifurcated questionnaire. The initial section encompassed demographic attributes such as gender, age, history of infertility, type of infertility, reason for infertility, and educational background. The second section consists of a questionnaire consisting of 30 questions that assess one's attitude toward surrogacy. This questionnaire was not developed by the authors, but rather it is a previously validated instrument. The Gestational Surrogacy Attitudes Scale (GSAS) was developed and psychometrically evaluated by Rahimi Kian et al. in 2016. The development process of the GSAS included a comprehensive literature review, a qualitative pilot study on 15 infertile couples, and an expert advisory panel of 20 members. The individual's attitude toward using a surrogate was evaluated utilizing a 5-point Likert scale. The positive attitude statements, consisting of Items 1–5, 12, 13, 16, 19, 20, 21, 25, and 27–30, were rated on a scale of Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, and Strongly Disagree = 1. On the other hand, the negative attitude statements, consisting of Items 6–11, 14, 15, 17, 18, 22–24, and 26, were scored in the reverse order of the aforementioned scoring. Afterward, the combined scores of all the items in the questionnaire were utilized to obtain the total score. Therefore, a score of 150 on the attitude scale would suggest a significantly positive attitude toward surrogacy, whereas a score of 30 would indicate a considerably more negative attitude. Attitudes are categorized into five distinct subscales. The first subscale, consisting of Items 1–9, measures the level of overall acceptance of surrogacy. The second subscale, comprising Items 10–13, assesses attitudes toward surrogacy in the public. The third subscale, encompassing Items 14–19, examines attitudes toward children born through surrogacy. The fourth subscale, consisting of Items 20–26, focuses on attitudes toward the surrogate mother. Lastly, the fifth subscale, comprising Items 27–30, evaluates deliberate attitudes and future efforts for a surrogate. The range of scores for the subscales is governed by the number of questions and is as follows: The range of scores for general acceptance of surrogacy is 9–45. The range of scores for general attitude and further surrogacy attempts is 4–20. The range of scores for a child born through surrogacy is 6–30. The range of scores for surrogate mothers is 7–35. The content validity was demonstrated with a content validity ratio (CVR) of 0.73 and a content validity index (CVI) of 0.98. The overall scale exhibited a Cronbach's α coefficient of 0.91, indicating high internal consistency. Additionally, the intraclass correlation coefficient (ICC) for test-retest reliability was 0.89 [7].

2.4 | Data Gathering Method

All participants gave informed written consent before their inclusion in the study. They were thoroughly informed about the study's stages and objectives, assured of the confidentiality of their data, and advised of their right to withdraw at any point without repercussions.

2.5 | Ethical Considerations

The study received approval from the Ethics Committee of Kermanshah University of Medical Sciences (IR.KUMS.REC.1402.207).

The objectives were communicated to the participating couples, and written informed consent was secured, underscoring the commitment to maintaining the confidentiality of participant information.

2.6 | Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 22.0. Descriptive statistics, including frequencies (percentages) and means (standard deviations), were used to summarize the characteristics of the study population. Independent samples *t*-tests were employed to compare the attitudes of male and female infertile couples toward surrogacy. A multiple linear regression model was used to investigate factors associated with the attitudes of infertile couples toward surrogacy. All analyses were two-sided, with a pre-specified α level of 0.05.

3 | Results

The study involved 176 infertile couples, with 80 (45.4%) men and 96 (54.5%) women. The couples who had not used any ART were 46.02%. 78.98% of the participating couples had primary infertility, and 46.59% of them had infertility problems for more than 10 years (Table 1).

3.1 | Attitudes Toward Surrogacy

The average scores of the attitude toward surrogacy in a total of 176 infertile couples participating in this study were reported as 92.93 ± 4.89 , with no significant differences between females and males. Also, the average scores of the five distinct subscale attitudes were not significantly different between females and males (Table 2).

TABLE 1 | The demographics data of respondents.

Variable	Subgroup	Number	%
Age	Males	80	45.45
	Females	96	54.55
Education	≤ Diploma	53	30.11
	> Diploma	123	69.89
Infertility years	≤ 10 years	94	53.41
	> 10 years	82	46.59
Type of infertility	Primary	139	78.98
	Secondary	37	21.02
Infertility factor	Male	45	25.57
	Female	72	40.91
	Male and female	59	33.52
ART history	None	81	46.02
	At least one of them	95	53.98

TABLE 2 | Attitudes of infertile couples toward surrogacy.

	Total			Male		Female		<i>p</i> value
	Mean \pm SD	Min	Max	Mean	SD	Mean	SD	
Overall acceptance of surrogacy	30.02 \pm 3.28	21	38	29.02	3.58	30.36	2.97	0.136
Surrogacy and public attitude	11.75 \pm 1.46	7	16	11.71	1.43	11.791	1.50	0.722
Children born through surrogacy	16.62 \pm 1.84	12	21	16.38	1.64	16.82	1.97	0.118
Surrogate mother	21.14 \pm 2.25	15	27	21.35	2.29	20.97	2.20	0.227
Intentional attitudes and surrogacy future	13.38 \pm 1.54	10	17	13.36	1.51	13.39	1.56	0.886
Total scale	92.93 \pm 4.89	79	103	92.43	5.31	93.35	4.49	0.216

3.2 | Factors Associated With Attitudes of Infertile Couples Toward Surrogacy

The result of the study showed a significant relationship between a couple's education level, intentional attitudes, and surrogacy future. In other words, the results showed that with increasing education levels, intentional attitudes and surrogacy future decreased ($b = -0.59$, $p = 0.02$, Table 3).

The study found a significant relationship between the ART history and children born through surrogacy; with couples who had an ART history, the score of children born through surrogacy decreased significantly ($b = -0.60$, $p = 0.04$, Table 3).

There was a significant relationship between the ART history and the overall acceptance of surrogacy; with couples who had an ART history, the score of overall acceptance of surrogacy increased significantly ($b = 1.6$, $p = 0.002$, Table 3). There was no significant relationship between age, gender, and infertility years and the attitudes of infertile couples and their dimensions toward surrogacy.

4 | Discussion

This study aimed to investigate the attitudes of Iranian infertile couples toward surrogacy in Kermanshah city. A total of 176 participants took part in the research. The mean attitude score toward surrogacy was 92.93 ± 4.89 . Given that the male-to-female ratio in this study was 0.8, no significant difference was observed between infertile women and men. These results align with previously conducted studies in Iran [17]. This study found no significant differences in the attitude toward surrogacy between infertile women and men in total and five distinct subscale attitudes, which was consistent with the results of the study of Kian et al. [7] and Saito et al. [18].

Contrary to expectations, the present study showed that with the increase in the education level of the couple, the scores related to the intentional attitudes and surrogacy future gradually decreased and the couple reported a more negative attitude. This was contrary to the results of the study of Lutkiewicz et al. [3] and some studies conducted in Iran [13]. One possible reason is that higher levels of education may reduce the stress associated with infertility [19]. In recent decades, the desire to marry and have children has diminished with higher levels of education, particularly among women [20]. However, a higher

level of education does not necessarily equate to increased knowledge about utilizing assisted reproductive methods. In this regard, the study by Shakour et al. [21] across various academic disciplines revealed that knowledge about surrogacy is more prevalent in fields related to medical sciences compared to other fields. Therefore, promoting education and public awareness about assisted reproductive techniques, such as surrogacy, may lead to more positive attitudes. When couples have a positive attitude toward ART, they are more likely to embrace it [18].

The study found a significant relationship between the ART history and children born through surrogacy; with couples who had an ART history, the score of children born through surrogacy decreased significantly. This result is consistent with the findings of Mahmoodian et al. [12] and Mohebbi Kian et al. [22]. Since infertile women cannot get pregnant and fully experience the experience of motherhood in gestational surrogacy, they are afraid of the possible dependence of the surrogate mother on the born child [23]. On the other hand, the fear of informing children born through surrogacy in the future can be one of their other concerns [24]. The results of a study conducted in Iran showed that most of the women facing infertility may have concerns that a child born through surrogacy might face societal rejection in the future, struggle with identity or personality issues, and worry whether they can love the child as deeply as a biological child. Additionally, there is a concern that the child may develop a stronger emotional bond with the surrogate mother [12].

There was a significant relationship between the ART history and the overall acceptance of surrogacy; with couples who had an ART history, the score of overall acceptance of surrogacy increased significantly. The modern advancements in ART can significantly assist individuals facing infertility [25]. Studies conducted to date indicate that a considerable number of infertile couples in Iran have successfully utilized ART [26]. Generally, infertile couples are increasingly turning to ART [27].

In this study, no significant correlation between age, gender, duration of infertility, and the attitudes of infertile couples toward surrogacy and its various aspects was observed. Further research into demographic factors could be crucial in evaluating their impact. Given Iran's ethnic diversity, it is expected that outcomes may vary across different cities and ethnic groups. Therefore, it is crucial to conduct further studies across various regions and ethnic groups.

TABLE 3 | Factors associated with attitudes of infertile couples toward surrogacy.

	Overall acceptance of surrogacy				Surrogacy and public attitude				Children born through surrogacy				Intentional attitudes and surrogacy future				Surrogate mother				Total scale			
	95% CI		p value	b	95% CI		p value	b	95% CI		p value	b	95% CI		p value	b	95% CI		p value	b	95% CI		p value	b
	LB	UB			LB	UB			LB	UB			LB	UB			LB	UB			LB	UB		
Age	0.02	-0.04	0.09	0.41	-0.00	0.02	0.59	-0.02	-0.06	0.01	0.27	0.003	-0.02	0.03	0.82	0.029	-0.01	0.07	0.23	0.031	-0.07	0.13	0.55	0.55
Gender	0.78	-0.23	1.8	0.13	0.08	-0.38	0.55	0.39	-0.19	0.97	0.18	-0.01	-0.5	0.47	0.94	-0.32	-1.0	0.39	0.37	0.92	-0.6	2.4	0.24	0.24
Education	-0.41	-1.4	0.64	0.44	0.45	-0.02	0.93	0.095	-0.50	0.69	0.75	-0.59	-1.1	-0.0	0.02	-0.34	-1.0	0.38	0.35	-0.80	-2.4	0.80	0.32	0.32
Infertility years	-0.87	-2.0	0.29	0.14	0.05	-0.47	0.59	0.83	-0.06	1.2	0.07	-0.04	-0.60	0.51	0.86	-0.35	-1.1	0.45	0.38	-0.62	-2.4	1.1	0.49	0.49
ART history	1.6	0.63	2.7	0.002	-0.15	-0.63	0.32	0.52	-1.2	-0.0	0.04	0.11	-0.39	0.61	0.65	-0.50	-1.2	0.23	0.18	0.53	-1.0	2.1	0.51	0.51

Note: Bold values are statistically significant.

A key limitation of this study was the absence of simultaneous assessment of both partners within each couple. This would have allowed for a more nuanced understanding of the interplay between individual and shared perspectives on surrogacy. For instance, it would have been valuable to explore potential discrepancies in attitudes between partners, particularly given the potential influence of traditional gender roles in Iranian society, where men may exert greater influence on decision-making processes. Future research should consider employing a dyadic approach to gain a more comprehensive understanding of couple dynamics and their impact on surrogacy attitudes and decision-making.

5 | Conclusion

In the present study, we clarified the attitudes of Iranian infertile couples toward surrogacy. Our results showed that age, gender, and duration of infertility did not impact attitude. However, education level can have a negative impact on attitudes toward selecting surrogacy, and a history of using other assisted reproductive methods has a positive effect. The availability of specific ARTs differs by country and is shaped by sociocultural norms, religious beliefs, and ethical considerations. Beyond social and cultural influences, elements such as economic conditions and levels of awareness also play a role in the choice of alternative reproductive methods. Therefore, trying to generalize or compare the perspectives of different cultures regarding surrogacy may not provide accurate insights.

Author Contributions

Masoumeh Esmailvand: conceptualization, investigation, funding acquisition, writing – original draft, methodology, validation, visualization, writing – review and editing, software, project administration, formal analysis, data curation, supervision, resources. **Arezo Haseli:** conceptualization, validation, visualization, methodology, formal analysis, supervision. **Alirez Karampour:** data curation, software, project administration, writing – original draft, visualization. **Alireza Khatony:** conceptualization, funding acquisition, investigation, validation, visualization, formal analysis, project administration, supervision, resources. **Shahab Rezaeian:** funding acquisition, investigation, validation, project administration, formal analysis, supervision, resources. **Amirhossein Naghibzadeh:** investigation, writing–original draft, validation, writing – review and editing, formal analysis, project administration, data curation, resources. **Mohammad Mehdi Mohammadi:** conceptualization, investigation, funding acquisition, writing – original draft, methodology, validation, visualization, writing – review and editing, software, formal analysis, project administration, data curation, supervision, resources.

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Ethics Statement

This study was ethically approved by the ethics committee of Kermanshah University of Medical Sciences (IR.KUMS.REC.1402.207).

Consent

The researcher obtained the written informed consent of each participant. Participants were assured that they had the right to withdraw from the study at any stage.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

Transparency Statement

The ME affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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