

The Relationship between Health Literacy and Quality of Life in Infertile Women: A Cross-Sectional Study



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Abstract:

Introduction/objectives: Infertility constitutes a major public health concern in the world. The present study sought to examine the association between health literacy and quality of life among infertile women.

Methods: This cross-sectional study was done in the Professor Ghavaamzadeh Infertility Center in Arak during the winter of 2024. A total of 258 infertile women were recruited via convenience sampling. Participants were administered a demographic questionnaire alongside the WHOQOL-BREF instrument to assess quality of life and the Health Literacy for Iranian Adults (HELIA) questionnaire to evaluate health literacy. Data analysis involved descriptive statistics and Pearson correlation coefficients, with statistical significance set at $p < 0.05$.

Results: Significant positive correlations emerged between various health literacy domains and quality of life measures, including reading educational materials ($r = 0.30$, $p = 0.001$), information accessibility ($r = 0.40$, $p = 0.001$), comprehension of health concepts ($r = 0.65$, $p = 0.046$), decision-making abilities ($r = 0.47$, $p = 0.030$), and overall health literacy ($r = 0.222$, $p = 0.035$).

Discussion: The results underscore the importance of enhanced health literacy as a determinant of improved quality of life among women experiencing infertility.

Conclusion: The findings suggest that implementing strategies to improve health literacy should be considered a fundamental component of infertility care.

Keywords: Infertility, Reproductive health, Iran, Education, Counseling, Health provider.

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1. INTRODUCTION

Infertility is a problem around the world. It affects many people in less developed countries.

Around 186 million people worldwide experience difficulty conceiving [1-3]. This condition affects approximately 17.5% of adults, meaning that 1 in every 6 individuals of reproductive age will encounter challenges

conceiving at some point in their lives [4]. Infertility is a challenge faced by many individuals and is a major concern for those who wish to have children. On average, approximately 21-22% of women experience primary infertility at some point during their married life [5]. Dealing with infertility is often challenging due to societal perceptions. People struggling to conceive frequently feel

as though they have failed and may experience anxiety and depression, making their lives particularly challenging [6]. The concept of quality of life is difficult to understand and measure because people from different cultures and backgrounds have varying ideas about what makes them happy [7]. This influences how people perceive their well-being. In this context, quality of life is understood as a multidimensional concept that encompasses happiness or satisfaction, reflecting an individual's subjective sense of well-being based on their level of satisfaction or dissatisfaction with the areas of life they consider important [8, 9].

Dealing with infertility is a challenging and lengthy journey. It often involves invasive procedures and high costs. Women seeking to conceive through treatments such as assisted reproductive technologies (ART) face important decisions regarding their course of action [10, 11]. Throughout this process, individuals encounter a variety of physical and emotional challenges associated with hormone therapies and medical evaluations. In this context, the ability to comprehend health-related information is essential for effective self-management. Health literacy constitutes a fundamental component in the maintenance of well-being within the framework of infertility and assisted reproductive technologies. It involves a combination of personal competencies and social support systems that empower individuals and communities to locate, interpret, assess, and utilize health information and services in order to make informed decisions regarding their health [12]. The application of health information to daily decision-making, encompassing medical treatment, disease prevention, and health promotion, is crucial for maintaining or enhancing quality of life throughout the lifespan [13].

Individuals exhibiting limited health literacy tend to demonstrate poorer outcomes in self-care, stress management, and coping mechanisms when confronted with challenging conditions, such as infertility and its associated treatments, relative to those possessing adequate health literacy. This observation indicates a substantial relationship between health literacy and quality of life among women experiencing infertility. Consequently, the present study was designed to examine the correlation between health literacy and quality of life among infertile women receiving care at the Professor Ghaemzadeh Infertility Clinic in Arak, Iran, in 2024.

2. METHODS

2.1. Study Design and Participants

This cross-sectional study was conducted on 258 women diagnosed with infertility who attended the Professor Ghavaamzadeh Infertility Center in Arak during the winter of 2024. Women willing to participate were recruited through convenience sampling after providing written informed consent. Before enrollment, the study objectives were explained to all potential participants. In total, 300 questionnaires were distributed to eligible women. Of these, 42 were either not returned or were excluded due to incomplete responses; therefore,

recruitment continued until the target sample size was achieved.

They completed a demographic questionnaire, the Health Literacy Questionnaire, and the WHOQOL-BREF Quality of Life Questionnaire in a self-administered format.

2.2. Inclusion and Exclusion Criteria

Eligibility criteria included an age of 18–45 years, absence of cardiovascular, hepatic, renal, or endocrine disorders, confirmed infertility, sufficient literacy to complete the questionnaires, and no history of psychiatric illness. Women who submitted incomplete questionnaires were excluded from the analysis.

2.3. Sample Size

To determine the minimum required sample size, the study by Khaleghi *et al.* (2019) was referenced [14]. In this article, the correlation coefficient between health literacy and quality of life was reported as $r = 0.2$ (26). Considering a type I error rate of 5% ($Z_{(1-\alpha/2)} = 1.96$), a test power of 80% ($Z_{(1-\beta)} = 0.84$), and accounting for a 30% sample attrition rate, the required sample size was calculated to be 258 individuals.

2.4. Instruments

- **Demographic Questionnaire:** Collected data on age, education, occupation, duration of infertility, and history of miscarriage.
- **Quality of Life:** Measured using the WHOQOL-BREF (26-item short form), developed by the World Health Organization in 1996 [15]. It comprises four domains: physical health, psychological health, social relationships, and environmental health, plus an overall score. Raw scores were transformed to a standardized 0–100 scale, with higher scores indicating better quality of life. The Persian version has demonstrated good internal consistency (Cronbach's $\alpha = 0.70$) [16].
- **Health Literacy:** Assessed using the Health Literacy for Iranian Adults (HELIA) questionnaire developed by Montazeri *et al.* This 33-item instrument covers five domains: access to health information, reading comprehension of health materials, understanding health concepts, appraisal of health information, and decision-making in health behaviors. Items are rated on a 5-point Likert scale, yielding scores between 33 and 100. Reported Cronbach's α values range from 0.72 to 0.89, indicating acceptable reliability [17, 18].

2.5. Data Analysis

Data were analyzed using SPSS version 24. Descriptive statistics summarized demographic and clinical characteristics. The normality assumption was confirmed using Shapiro-Wilk tests, and Pearson's correlation coefficient was then applied for the analysis. Pearson correlation coefficients were used to examine associations between continuous variables, while chi-square tests assessed relationships between categorical variables. A significance level of 0.05 was adopted for all analyses.

3. RESULTS

3.1. Participant Characteristics

The mean age of participants was 31.99 ± 5.37 years, and the mean duration of marriage was 2.85 ± 1.04 years. The majority of women were homemakers (76.4%), followed by those self-employed (17.8%) and employed in formal occupations (5.8%). Regarding education, 22.5% had completed primary school, 24% had less than a high school diploma, 31% held a high school diploma, and 22.5% had a university degree. Most participants (84.2%) experienced secondary infertility, while 15.8% reported primary infertility. A history of miscarriage was reported by 81.8% of women, with one miscarriage being the most common (47.3%) (Table 1).

3.2. Health Literacy Scores

The mean overall health literacy score was 71.03 ± 10.15 ($r = 0.222$, $p = 0.035$), indicating a level slightly above average. Subscale means were as follows: reading educational materials (68.17 ± 21.43 , $r = 0.30$, $p = 0.001$), access to health information (70.40 ± 20.91 , $r = 0.40$, $p = 0.001$), understanding health concepts (72.01 ± 22.48 , $r = 0.65$, $p = 0.046$), and decision-making in health behaviors (79.28 ± 12.75 , $r = 0.47$, $p = 0.03$) (Table 2).

3.3. Quality of Life Scores

The mean overall quality-of-life score was 69.8 ± 13.8 . Subscale means were: physical health (51.7 ± 10.2), psychological health (62.4 ± 12.6), social relationships (65.08 ± 15.6), and environmental health (60.2 ± 14.6). These findings indicate that higher levels of health literacy across multiple domains are associated with better quality of life among infertile women (Table 3).

Table 1. Demographic characteristics of infertile women (n = 258).

Variable	Category	n (%)	Mean $\pm$ SD
Age (years)	-	-	31.99 ± 5.37
Occupation	Homemaker	197 (76.4%)	-
	Self-employed	46 (17.8%)	-
	Employed	15 (5.8%)	-
Education level	Primary	58 (22.5%)	-
	Below high school	62 (24.0%)	-
	High school diploma	80 (31.0%)	-
	University degree	58 (22.5%)	-
Duration of infertility	1 year	62 (24.0%)	-
	2 years	100 (38.8%)	-
	3 years	70 (27.1%)	-
	4 years	26 (10.1%)	-
History of miscarriage	Yes	211 (81.8%)	-
	No	47 (18.2%)	-
Number of miscarriages	One	100 (47.3%)	-
	Two	74 (35.0%)	-
	Three	37 (17.7%)	-
Type of infertility	Primary	41 (15.8%)	-
	Secondary	217 (84.2%)	-

Table 2. Mean scores of health literacy and quality of life domains.

Domain / Subscale	Mean $\pm$ SD
Health Literacy	-
Reading educational materials	68.17 ± 21.43
Access to health information	70.40 ± 20.91
Understanding health concepts	72.01 ± 22.48
Decision-making in health behaviors	79.28 ± 12.75
Overall health literacy	71.03 ± 10.15
Quality of Life	-
Physical health	51.7 ± 10.2
Psychological health	62.4 ± 12.6
Social relationships	65.08 ± 15.6
Environmental health	60.2 ± 14.6
Overall quality of life	69.8 ± 13.8

Table 3. Correlation between health literacy domains and quality of life.

Health Literacy Domain	Pearson's r	p-value
Reading educational materials	0.30	0.001
Access to health information	0.40	0.001
Understanding health concepts	0.65	0.046
Decision-making in health behaviors	0.47	0.030
Overall health literacy	0.222	0.035

4. DISCUSSION

A study conducted at an infertility clinic in Arak, Iran, in 2024 found that the participating women generally had a favorable quality of life and a moderately high level of health literacy. Notably, the data demonstrated a positive correlation between health literacy and quality of life, indicating that women with greater understanding of health-related information tended to experience a higher quality of life. These findings underscore the significant inter-relationship between health literacy and quality of life within this population. Furthermore, the results highlight the critical role of health literacy in promoting positive patient outcomes, emphasizing its importance as a fundamental factor in overall well-being and effective healthcare management. For instance, studies by Shao *et al.* [12] and Walters *et al.* [13] have demonstrated that individuals with health literacy are better equipped to manage their own health, make informed, healthier decisions, and exhibit reduced anxiety and stress. Health literacy thus confers significant advantages to patients. Consistent with these findings, the research revealed that women with higher health literacy report an enhanced quality of life, underscoring the critical importance of educating patients in the skills necessary to access, comprehend, and apply health-related information. Consequently, health literacy emerges as a fundamental component in patient care. Notably, the strongest correlation was observed between comprehension of health-related concepts and quality of life ($r = 0.65$). This

result is especially significant, as the ability to understand medical information, including diagnostic test outcomes, treatment procedures (such as IVF or ICSI), and possible adverse effects of hormonal stimulation, facilitates the transition of patients from passive recipients of healthcare to active agents in their therapeutic process. This active involvement may mitigate anxiety caused by misinformation, harmonize patient expectations with clinical realities, and consequently enhance coping strategies, thereby contributing to improvements in both psychological well-being and the environmental dimensions of quality of life.

Additional dimensions of health literacy, including the ability to access information and comprehend educational materials, also showed significant positive associations with quality of life. These results align with the findings of Assaysh Öberg *et al.*, who emphasized that enabling patients to effectively engage with trustworthy health resources can alleviate distress and enhance overall well-being [10]. Furthermore, the decision-making domain demonstrated a significant association with quality of life, highlighting the critical role of utilizing health information to inform behavioral choices. This finding is consistent with the conclusions of Nahata *et al.*, who argued that improving health literacy is essential for optimizing reproductive health decision-making, particularly among younger individuals engaged in fertility preservation and family planning [19].

5. STUDY LIMITATIONS

Several limitations of this study warrant consideration. Firstly, the cross-sectional design precludes the establishment of causal relationships, as it captures data at a single point in time. Secondly, the use of convenience sampling from a single clinical site may limit the generalizability of the findings, given that the sample may not be representative of the wider population. Lastly, reliance on self-reported data introduces the potential for response bias, as participants may not provide entirely accurate information.

CONCLUSION

In conclusion, the findings suggest that implementing strategies to improve health literacy should be considered a fundamental component of infertility care. Equipping women with the necessary knowledge and competencies to critically evaluate health information and make informed decisions enables healthcare providers to mitigate the emotional and physical burdens associated with fertility treatments, thereby enhancing overall quality of life.

AUTHORS' CONTRIBUTIONS

The authors confirm contributions to the paper as follows: K.V. & A.KH.: Conception and design, provision of study materials for patients, data collection and assembly, data analysis and interpretation, article writing, reviewing, and editing; M.S.: Conception and design, data analysis and interpretation, and editing. All the authors read and approved the final manuscript.

LIST OF ABBREVIATIONS

HELIA = Health Literacy for Iranian Adults
ART = Assisted Reproductive Technologies

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The thesis in general medicine was approved in accordance with the ethical code of the Ethics Committee of Arak University of Medical Sciences, Iran (No. IR.ARAKMU.REC.1403.325).

HUMAN AND ANIMAL RIGHTS

All procedures involving human participants were conducted in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

The participants in this study signed the written informed consent forms. In addition, women had the right to participate in or withdraw from the study.

STANDARDS OF REPORTING

The study was conducted in accordance with the STROBE guidelines.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of this study are available from Arak University of Medical Sciences, subject to applicable access restrictions. The data were used under license for the current study and are therefore not publicly available. However, the data may be obtained from the authors upon reasonable request and with permission from Arak University of Medical Sciences (<https://vdtresearch.arakmu.ac.ir/general/homePage.actionasno:7555>).

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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