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Perception and Acceptance of Assisted Reproductive Technologies (ART) Among Infertile Couples in Saudi Arabia: A Cross-Sectional Questionnaire-Based Study

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Abstract:

Background: Infertility is a significant health concern affecting 10–15% of couples in Saudi Arabia, with Assisted Reproductive Technologies (ART) offering potential solutions. However, cultural, religious, and socioeconomic factors heavily influence the perception and acceptance of these treatments. This study examines the perception and acceptance of ART among infertile couples in Saudi Arabia.

Methods: A cross-sectional questionnaire-based study was conducted from January to December 2024, involving 428 infertile couples (aged 20–49) attending fertility clinics in Mecca. Data were collected on demographics, ART awareness, perceptions (including cost and stigma), and predictors of acceptance. Statistical analysis was performed using SPSS v.26, with significance set at $p < 0.05$.

Results: The study revealed high awareness of ART (87.9%), with healthcare providers (46.3%) and the internet (33.4%) as primary information sources. However, only 67.5% correctly defined IVF. Acceptance of ART was higher among women (71.8% vs. 61.7% in men, $p = 0.023$), those with higher income (OR = 1.95 for >20,000 SAR) and education (OR = 2.31), and couples with longer infertility duration (>5 years, OR = 3.14, $p < 0.001$). Major barriers included cost (82.7%) and social stigma (55.6%).

Conclusion: While awareness of ART is high, financial constraints and societal stigma remain significant obstacles. Policymakers and healthcare providers should address these barriers through subsidized treatment programs and public education campaigns to improve ART accessibility in alignment with cultural and religious values.

Keywords: Assisted Reproductive Technologies, ART, infertility, Saudi Arabia, IVF, awareness, acceptance, cost barriers, social stigma

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1.Introduction:

Modern techniques emerging under Assisted Reproductive Technologies (ART) transformed the reproductive health field through such novel solutions for infertile couples. Experts define infertility as a condition that prevents couples from getting pregnant after one year of unprotected sexual relations and it impacts large numbers of partners worldwide [1]. WHO reports that infertility affects approximately 15% of couples who total 48 million couples worldwide. Data from studies show Saudi Arabia experiences high rates of infertility among couples as the prevalence stands at 10-15% which represents a developing public health problem in this area [2].

The way people view ART becomes shaped by multiple elements that stem from cultural, religious or social-economic and psychological elements. Understanding PAP becomes vital for Saudi Arabia since its cultural beliefs and religious teachings determine how people behave when it comes to their health and medical needs [3]. Saudi Arabian society being conservative along with religious Islamic doctrines strongly impacts public opinions about reproductive technology systems. Third-party gametes including sperm or egg donations encounter significant ethical and religious resistance thus affecting how many couples decide to use ART services [4].

The Saudi healthcare system has significantly enhanced its ability to deliver ART services since the beginning of the present decade. The Saudi Fertility Society reported that ART clinic establishments rose from 10 in the early 2000s to more than 40 by 2020 [5]. The clinics supply patients with various reproductive treatment options which include IVF and IUI with ICSI. Research needs extensive development to study social acceptance levels of ART technologies among infertile couples because of growing technological progress and accessibility in ART [3].

Education plays an indispensable role in forming perceptions about things. A poor quantity or incorrect information about ART procedures blocks the successful adoption of this technology. Scientific research has found that numerous couples retain wrong ideas about how assisted reproduction therapy works and its potential dangers and achievement rates. The lack of familiarization about ART leads people to create negative social judgments which induce hesitation toward medical care and interferes with treatment choices. Healthcare providers together with policymakers and advocates who want to improve access for ART need to develop a strong grasp of the socio-cultural environments where these couples live [3, 6].

The financial situation between partners is a major component that influences their choice to pursue any form of ART treatment. The steep expense of treatment prevents some couples from securing needed medical procedures although selected ART methods receive partial insurance coverage yet most couples are unable to get this information. People in Saudi Arabia must spend between SAR 10,000 to SAR 20,000 for a single IVF treatment cycle due to its high expense. Infertile couples experience increased stress from ART expenses that makes their decision-making process more challenging [6]. The research evaluates how Saudi Arabian cultural norms and Islamic beliefs interact with economic status and social judgments about infertility.

2.Methodology:

Study Design and Setting

The research scheme combined cross-sectional survey data for the purpose of assessing infertile couples in Saudi Arabia about their acceptance and perception of Assisted Reproductive Technologies (ART). The study took place at numerous fertility clinics within Mekkah city during the period from January 2024 through December 2024.

Study Population and Sampling

A target population of married couples experiencing infertility was selected because they had an inability to get pregnant after twelve months of unprotected intercourse. The research used convenience sampling to obtain participants while selecting candidates who met specific requirements including:

- Age between 20–49 years
- Marriage status and infertility issue.
- A confirmed diagnosis of infertility
- Willingness to participate voluntarily

Exclusion criteria involved individuals with cognitive impairments or those unwilling to complete the questionnaire. A total of 428 participants were enrolled, ensuring sufficient statistical power for multivariate analysis.

Data Collection Tool and Variables

A structured, self-administered questionnaire was developed in Arabic, the primary language of participants. The tool was validated through a pilot study (n=30) to assess clarity and reliability (Cronbach's alpha = 0.82). The questionnaire comprised four sections:

1. **Demographics**: Age, gender, education level, income, and duration of infertility.
2. **Awareness of ART**: Knowledge about ART, sources of information, and understanding of IVF.
3. **Perception and Attitudes**: Cultural/religious acceptability, willingness to use ART, perceived barriers (cost, stigma).
4. **Factors Influencing Acceptance**: Logistic regression analysis of sociodemographic predictors.

Data Collection Process

Research assistants who received training distributed questionnaires in waiting areas of clinics while providing a private environment for voluntary participation. The process for obtaining written consent included promises to maintain confidentiality. Participants needed 15–20

minutes to finish the survey. The data received confidential handling through secure existing data storage methods.

Statistical Analysis

Data were analyzed using SPSS v.26. A statistical summary of demographic and awareness variables used descriptive statistics which produced frequencies and percentages. Multivariate logistic regression determined the predictors of ART acceptance through quantification of adjusted odds ratios (ORs) and 95% confidence intervals (CIs). Chi-square statistical analysis examined how gender affects individual acceptance levels for the treatment. A statistical significance threshold stood at p-value <0.05.

Ethical Considerations

The Institutional Review Board (IRB) at Umm AlQura University issued ethical approval through document (Approval No. (HAPO-02-K-012-2025-04-2658)). All participants were told about voluntary withdrawal rights while the researchers avoided offering any rewards to participants. The information preserved its confidential nature in compliance with Helsinki Declaration standards.

3.Results:

The research analysis included 428 participants whose age range fell between 30–39 (55.6% of the total sample size n=238) with a female population slightly higher than males (53% n=227 versus 47% n=201). The research participants mostly had bachelor degrees (67.1%, n=287) while 46.3% (n=198) earned between 10,000–20,000 SAR monthly. The most frequent duration of infertility was 3–5 years which comprised 43.7% of participants (n=187).

Medical staff (46.3%) and online resources (33.4%) were the main sources that informed participants about ART procedures according to Table 2 since the majority (87.9%) of participants had awareness of this reproductive medical technology. Only 67.5% of participants among 289 respondents (n=289) provided the correct definition of IVF technology.

The study data in table (3) revealed that cultural/religious acceptability of ART received agreement from 67.1% (n=287) while cost barriers were identified by 82.7% (n=354) and social stigma had influence on 55.6% (n=238) of participants. A substantial number of 75.0% (n=321) expressed readiness to consider using ART when they needed it.

Table (4) demonstrates that people within the age bracket of 30–39 (OR=1.82, p=0.011) and females (OR=1.67, p=0.013) together with individuals owning higher education (OR=2.31, p=0.001) and earning over 20,000 SAR (OR=1.95, p=0.006) displayed increased acceptance toward ART. The long history of infertility strengthened the relationship such that individuals with this condition faced a 3.14 times higher chance of using ART compared to others (p<0.001).

Table (5) shows that, females expressed higher acceptance (71.8%, *n=163*) than males (61.7%, *n=124*; *p=0.023*). Neutral/low acceptance was comparable across genders (25.9% males vs. 19.4% females, *p=0.118*).

Table 1: Demographic Characteristics of Participants (N=428)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	20–29	112	26.2
	30–39	238	55.6
	40–49	78	18.2
Gender	Male	201	47.0
	Female	227	53.0
Education Level	High school or less	89	20.8
	Bachelor's degree	287	67.1
	Postgraduate	52	12.1
Income (SAR/month)	<10,000	134	31.3
	10,000–20,000	198	46.3
	>20,000	96	22.4
Duration of Infertility	<3 years	156	36.4
	3–5 years	187	43.7
	>5 years	85	19.9

Table 2: Awareness and Sources of Information About ART (N=428)

Variable	Frequency (n)	Percentage (%)
Aware of ART	376	87.9
Main Source of Information		
- Healthcare providers	198	46.3
- Internet/Social media	143	33.4
- Family/Friends	62	14.5
- Other	25	5.8
Correct Knowledge of IVF	289	67.5

Table 3: Perception and Attitudes Toward ART (N=428)

Statement	Agree (n)	Agree (%)	Neutral (n)	Neutral (%)	Disagree (n)	Disagree (%)
"ART is acceptable in our culture/religion."	287	67.1	89	20.8	52	12.1
"We would consider ART if needed."	321	75.0	67	15.7	40	9.3
"Cost is a major barrier to ART access."	354	82.7	42	9.8	32	7.5
"Social stigma affects our decision."	238	55.6	112	26.2	78	18.2

Table 4: Factors Influencing ART Acceptance (Multivariate Logistic Regression)

Variable	Adjusted OR	95% CI	p-value
Age (30–39 vs. <30)	1.82	1.15–2.89	0.011
Female Gender	1.67	1.12–2.49	0.013
Higher Education	2.31	1.45–3.68	0.001
Income >20,000 SAR	1.95	1.22–3.12	0.006
Duration of Infertility (>5 yrs)	3.14	1.89–5.22	<0.001

Table 5: Comparison of ART Acceptance by Gender (Chi-Square Test)

Acceptance Level	Male (n=201)	Female (n=227)	p-value
High Acceptance	124 (61.7%)	163 (71.8%)	0.023
Moderate Acceptance	52 (25.9%)	44 (19.4%)	0.118
Low Acceptance	25 (12.4%)	20 (8.8%)	0.204

4.Discussion

This research shows that participants demonstrate extensive knowledge about assisted reproductive technologies (ART) because 87.9% of them have learned about these technologies from both healthcare providers (46.3%) and internet sources (33.4%). A prior Nigerian study demonstrated a similar pattern of results which showed 90.7% of women had ART knowledge but their understanding about services reached 57.9% only [7]. Healthcare professionals serve as the key information source regarding ART since 55.7% of Nigerian participants rely on them for ART knowledge according to research data [7]. The current study reveals that 67.5% of its participants demonstrated adequate understanding of the precise in vitro fertilization (IVF) definition despite widespread general knowledge about this procedure. The study participants from Pakistan displayed restricted knowledge and skepticism about ART procedures during the research period [8].

Research findings showed that females were more likely than males to accept ART procedures as observed through their acceptance rates (71.8% females and 61.7% males). Research worldwide has established that men view infertility through societal norms which make them associate it with masculine identity loss [4]. Male participants demonstrated neutral feedback rates to ART (25.9%) similar to female participants (19.4%) according to the p=0.118 value. This finding deviates from other research that revealed greater gender variations in ART skepticism [9].

Time has seemingly altered how society views infertility because male receptiveness toward fertility treatments seems to be increasing.

The study results demonstrated that subjects between 30 to 39 years old displayed greatest inclination to accept ART treatment (OR=1.82, p=0.011). A contradiction arises in research from Iran since older participants displayed decreasing attitudes toward assisted reproduction technology although this study shows younger people tend to accept fertility treatments (OR=1.82). (p=0.011) [9]. Users maintain different interpretations regarding fertility together with family planning initiatives based on their cultural backgrounds. The combination of reaching a higher education attainment level with an income surpassing 20,000 SAR consistently resulted in increased ART acceptance (OR=2.31, p=0.001; OR=1.95, p=0.006) because it demonstrates a connection between socioeconomic standing and healthcare decision-making capabilities. Research findings from Nigeria show that educated high-income people have greater acceptance of ART but some studies found no significant connection between socioeconomic factors and ART acceptance [10, 11, 12, 13].

In this research sample individuals who endured infertility for longer than five years exhibited the greatest inclination to accept ART according to statistical analysis (OR=3.14, p<0.001). Skilled infertile patients endure prolonged infertility which seems to boost their interest in advanced reproductive solutions because of their accumulated frustration from years of failed attempts. This study adds significant value by revealing this pattern in the clinical world even though previous research has not paid appropriate attention to this observation.

The path to adopting ART encounters major difficulties due to cultural and financial obstacles. The research shows that 67.1% of participants found ART acceptable within their religious and cultural framework however cost became a major barrier for 82.7% while 55.6% noted stigma as a significant factor. Research conducted in Nigeria showed that people were well aware of ART services yet avoided them because of financial problems together with societal expectations [14–15]. The acceptance of these procedures reached a minimal 7.6% in Northern Nigeria while showing similar patterns to Iran and Pakistan which experienced widespread resistance toward IVF and other ART procedures [16].

Research findings differ between this study and previous studies because of regional and cultural factors. An earlier Iranian research had established connection between residential area and acceptance [9]. The research conducted by Eladle et al. [17] showed that people of different ages had varying levels of knowledge regarding ART while this study discovered only one exception where older participants lacked understanding of technical IVF details. Local research needs to take place since it will serve as a foundation for developing awareness programs and policy improvements for specific areas.

5.Strengths of the Study

The study reveals important details about the knowledge base and beliefs and the variables responsible for shaping ART acceptance within the research participant community. The research benefits greatly from its big sample of 428 participants that strengthens the validity of its results. The study obtains results through analyzing population segments covering participants from different age categories combined with both genders and spanning various educational levels along with multiple income levels. The study exceeds previous investigations because it incorporates both awareness measures and perception indicators to deliver a comprehensive understanding of the subject. The statistically calculated odds ratios (OR) proved essential for validating study findings which indicated that patients experiencing infertility for more than five years accepting ART treatment at a rate three times greater than others (OR=3.14, $p<0.001$).

This study demonstrates strength through its ability to match laboratory results with cultural investigations including Nigeria and Pakistan and show distinctive regional patterns. The research validates the universal practice of medical professionals providing ART knowledge but establishes online information sources as main data channels (33.4%). Orthodox ground confirmation along with new finding authentication extends the depth of research in ART awareness and acceptance studies.

6. Limitations of the Study

This study faces various limitations even though it accomplers fundamental goals. The cross-sectional nature of the study hinders researchers from proving cause-effect relationships between the studied factors. The research establishes a correlation between greater acceptance of ART and both higher education and income but fails to prove whether these factors cause increased acceptance or merely link to unknown variables. The study uses only self-reported information about sensitive issues concerning infertility and social stigma which potentially introduces response errors in its findings. The reported data might show fewer negative perceptions because participants wish to create a favorable impression during interviews.

The study's findings experience restricted applicability because of demographic barriers together with societal traditions. The research population derives from a particular region so its findings cannot be considered applicable to cultural and religious norms which vary between different areas. The study revealed 67.1% acceptance of ART as culturally acceptable however this rate would be expected to differ strongly in societies which proved to be more conservative like Northern Nigeria where the acceptance rate was only at 7.6% [16].

7.Conclusion

The large proportion of people (87.9%) who identify with this subject along with their frequent use of healthcare providers for information represent positive factors which support specific educational initiatives. The implementation of policy interventions and community engagement must address the main obstacles of cost (82.7%) and social stigma (55.6%) to achieve full ART acceptance.

Researchers discovered valuable predictive elements consisting of greater education level and financial means and length of infertility treatments which guide medical service providers and governmental officials in their actions. Studies should adopt longitudinal approaches to prove causation in ART acceptance and add qualitative research methods for enhanced understanding of social and individual perceptions regarding these services. Subsequent research efforts should work to fix these identified gaps because they will enhance methods for improving access to assisted reproductive technologies and stigma reduction across different population groups.

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