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Psychological Distress and Quality of Life Among Infertility Couples Undergoing Infertility Treatment in Malaysia

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Abstract

Infertility often leads to stress, anxiety, and depression, significantly affecting the quality of life of affected couples. This study explored the sociodemographic and psychological factors influencing the quality of life among infertile couples undergoing in vitro fertilization (IVF) treatment in Malaysia, using a cross-sectional design. A total of 126 infertile couples were purposively sampled from three public hospitals offering IVF treatment. The Depression, Anxiety, and Stress Scale (DASS-21) measured psychological distress levels, while the Fertility Quality of Life (Ferti-QoL) scale assessed fertility-related quality of life. Data collection adhered to strict ethical standards, with confidentiality ensured. Participants provided informed consent and completed surveys independently in private settings to ensure unbiased responses. Statistical analyses, including t-tests, chi-square tests, and multiple linear regression, were employed to identify significant patterns and predictors. Results revealed that wives had significantly lower FertiQoL scores compared to husbands ($p < 0.001$). Wives also experienced higher levels of stress, anxiety, and depression as indicated by DASS-21 scores ($p < 0.001$). Regression analysis identified stress ($p < 0.001$), anxiety ($p = 0.04$), depression ($p < 0.001$), and gender ($p = 0.02$) as significant predictors of quality of life. Elevated levels of psychological distress were associated with a notable decline in quality of life, particularly among wives. These findings emphasize the importance of addressing mental health needs among couples undergoing IVF. Healthcare providers should focus on emotional preparedness and develop targeted strategies to reduce psychological distress, ultimately enhancing the overall quality of life during treatment.

Keywords: infertility, psychological distress, quality of life.

Abstrak

Tekanan Psikologis dan Kualitas Hidup Pasangan Tanpa Anak yang Menjalani Pengobatan Infertilitas di Malaysia. *Infertilitas sering kali menyebabkan stres, kecemasan, dan depresi, yang secara signifikan memengaruhi kualitas hidup pasangan yang terdampak. Studi ini mengeksplorasi faktor sosiodemografi dan psikologis yang memengaruhi kualitas hidup pasangan tidak subur yang menjalani perawatan* IVF *di Malaysia, menggunakan desain* cross-sectional*. Sebanyak 126 pasangan tidak subur dipilih secara* purposive sampling *dari tiga rumah sakit umum yang menyediakan layanan* IVF. Depression, Anxiety, and Stress Scale (DASS-21) *digunakan untuk mengukur tingkat tekanan psikologis, sementara skala* Fertility Quality of Life (Ferti-QoL) *menilai kualitas hidup terkait kesuburan. Pengumpulan data dilakukan mengikuti standar etik penelitian dengan menjaga kerahasiaan data dan privasi peserta. Peserta memberikan persetujuan tertulis dan menyelesaikan survei secara mandiri dan terisolasi untuk memastikan jawaban yang tidak bias. Analisis statistik, termasuk uji t,* chi-square*, dan regresi linier berganda, digunakan untuk mengidentifikasi pola dan prediktor yang signifikan. Hasil menunjukkan bahwa skor* FertiQoL *pada istri secara signifikan lebih rendah dibandingkan dengan suami ($p < 0,001$). Istri juga mengalami tingkat stres, kecemasan, dan depresi yang lebih tinggi seperti yang ditunjukkan oleh skor* DASS-21 *($p < 0,001$). Hasil analisis regresi mengidentifikasi stres ($p < 0,001$), kecemasan ($p = 0,04$), depresi ($p < 0,001$), dan jenis kelamin ($p = 0,02$) sebagai prediktor signifikan kualitas hidup. Tingginya tingkat tekanan psikologis berbanding lurus dengan penurunan kualitas hidup yang nyata, terutama pada istri. Temuan ini menekankan pentingnya menangani kebutuhan kesehatan mental pada pasangan yang menjalani* IVF. *Penyedia layanan kesehatan harus lebih mengutamakan kesiapan emosional dengan mengembangkan strategi yang ditargetkan untuk mengurangi tekanan psikologis guna meningkatkan kualitas hidup selama perawatan.*

Kata Kunci: *infertilitas, kualitas hidup, tekanan psikologis*

Introduction

The World Health Organization (WHO) defines infertility as a reproductive system disorder in which the inability to achieve a viable pregnancy following a minimum of one year of consistent unprotected sexual activity (WHO, 2018). Borght and Wyns (2018) estimated an 8–12% infertility rate worldwide making it a global public health issue. Over the past three decades, the total fertility rate (TFR) per woman decreased from 4.9% in 1970 to 1.8% in 2018, among those aged 15–49. Since 2013, the national TFR has been below the replacement level of 2.1%, indicating that the average number of children born per woman is insufficient to replace the current generation in the future in Malaysia (Department of Statistics Malaysia, 2019).

Infertility is a public health challenge that involves not only biological and medical aspects but also significantly impacts the psychological well-being and quality of life (QoL) of affected couples. In societies that place a strong emphasis on family values, the inability to conceive is often associated with social stigma, cultural pressure, and negative perceptions regarding one's role as a partner or parent. Therefore, research on the quality of life among childless couples must take a holistic view, incorporating both sociodemographic and psychological dimensions.

Several factors, such as age, gender, duration of marriage, race, socio-economic status, and health problems, can affect childless couples' QoL (Ariffin et al., 2020; Maroufizadeh et al., 2017). However, the results of the previous studies are rather inconsistent. Therefore, it is important to determine the socio-demographic factors associated with QoL. Sociodemographic factors such as age, gender, duration of marriage, level of education, income, and ethnic background have both direct and indirect influences on how couples cope with infertility-related stress. For instance, older women or couples who have been married for many years tend to experience heightened emotional distress due to perceived time constraints and mounting societal expectations.

Furthermore, variations in socioeconomic background may determine the level of access to fertility treatments, availability of social support, and resources to manage psychological stress. Infertile couples who fail to meet challenges in achieving conception can expose their mental health to various psychological distress, such as stress, anxiety, and depression (Cheng et al., 2018; Sham et al., 2020). Moreover, there is around 9.4% of suicidal risk among infertile women (Shani et al., 2016). According to Kamaruddin et al. (2020), 22% of divorces or separations are caused by infertility in Malaysia. Additionally, psychological harm, verbal insults, derision, physical abuse, and deprivation have been linked to the experience of infertility in women (Anokye et al., 2017).

The fertility treatment process itself also contributes significantly to mental health challenges. Procedures such as hormonal stimulation, in-vitro fertilization (IVF), and intrauterine insemination (IUI) demand considerable financial, physical, and emotional investment. Hormonal side effects, physical discomfort, and the uncertainty of treatment outcomes can result in repeated disappointment, further affecting psychological well-being and marital relationships. Studies have shown that emotional stress stemming from fertility treatment may lead to symptoms of depression, anxiety, helplessness, and, in more severe cases, suicidal ideation. Physical, mental, emotional, and behavioural health are all negatively impacted by the psychological suffering that childless couples endure. The emotional states such as tension, frustration, anger, and guilt, sociological challenges like stigmatization, self-isolation, and social withdrawal, as well as impacts on their marital and sexual relationships (Hess et al., 2018; Karaca & Unsal, 2015).

Therefore, it is crucial to investigate the interrelationship between sociodemographic factors, psychological distress, and quality of life among

infertile couples. This study aims not only to identify the factors contributing to lower quality of life but also to understand how the interplay between individual backgrounds and treatment experiences contributes to psychological strain. The findings of this research are expected to lay the foundation for developing more targeted interventions, including psychosocial support, fertility counselling, and emotional wellness programs tailored to the specific needs and contexts of these couples. The main objective of this study is to investigate the sociodemographic and psychological distress factors contributing to the quality of life among childless couples undergoing infertility treatment in Malaysia. The main objective of this study is to investigate the sociodemographic and psychological distress factors contributing to the quality of life among childless couples undergoing infertility treatment in Malaysia.

Methods

This cross-sectional study was conducted from June 2022 to April 2023 at three public hospitals in Malaysia providing IVF services. A total of 126 infertile married couples aged 18–49 years who were currently undergoing IVF treatment and fluent in Malay were chosen. Couples were excluded if they had previously biological or adopted children, had previously received psychiatric or psychological treatment, were not undergoing or newly registered for IVF treatment, or were not permanent Malaysian citizens.

Ethical approval was obtained from the Research Ethics Committee of Universiti Teknologi MARA (UiTM) and the Medical Research Ethics Committee of the Ministry of Health Malaysia. A list of eligible couples was prepared by nurses. A purposive sampling technique was used to select participants who met the study criteria.

The researcher approached potential participants in clinic waiting areas and provided both verbal and written information about the study. After obtaining informed consent, participants completed the questionnaires in a private counselling room. If necessary, participants were allowed to complete the forms after their medical appointment. All participants received forms consisting of an information sheet, consent form, sociodemographic questionnaire, the Depression Anxiety Stress Scale with 21 questions (DASS-21), and the Fertility Quality of Life (Ferti-QoL)-available in both Malay and English. Completing the forms took approximately five to ten minutes.

Psychological distress was assessed using the DASS-21 (Lovibond, 1998), while fertility related quality of life was evaluated using the Ferti-QoL questionnaire (Boivin et al., 2011). The Ferti-QoL comprises core subscales (mind-body, emotional, relational, and social) and one treatment-related subscale (environment and tolerability). Higher sub-scale and total scores indicate better perceived quality of life.

Data were analyzed using SPSS Version 28.0. Descriptive study (mean, standard deviation, and percentage) were used to summarize demographic and clinical characteristics. Chi-square tests were used to compare the couple's psychological distress levels between the couples, and t-tests were employed to assess differences in Ferti-QoL scores.

Univariable analysis applied simple linear regression, whereas multivariable analysis utilized multiple linear regressions. The analyses of independent variables in simple linear regression comprised sociodemographic variables and DASS-21 measured psychological distress. Simple linear regression and multiple linear regression were used together because simple linear regression served as an initial exploratory step to identify the basic relationship, while multiple linear regression was used to build more comprehensive and accurate model by considering various factors. Utilizing both ensured the relevancy, accuracy of the models, and clarity reflection on the relationships between variables. Therefore, these two techniques

complement each other in a comprehensive data analysis process.

Variables with p-value of 0.25 or lower were deemed significant during univariable analysis and included in the multiple linear regression model. A p-value < 0.25 was used in simple linear regression to allow the inclusion of more variables. Besides, even attributes with p > 0.25 were sometimes included if they were known to be important. In this study, any variable with a significance value < 0.25 was included in the model. Clinically significant but statistically insignificant variables were also included into the model. The model was assessed for interaction effects and multicollinearity. The initial assumptions of the final model were verified to ensure accuracy. The significance criterion for multivariable analysis was established at a p-value of less than 0.05 (two-tailed).

Results

Table 1 displays the socio-demographic characteristics of 252 participants (126 couples). The mean age of the participants was 36.36 years, with a standard deviation of 3.04. Most participants in this study were Malays (n = 214, 84.9%), Islam (n = 218, 86.5%), graduated with at least a certificate or diploma (n = 98, 38.9%),

Table 1. Demographic Characteristics of Respondents (N = 252)

Variable	Mean (SD)	Range	n	%
Age (years)	36.36 (3.04)	28–41		
< 30			20	7.9
30–39			191	75.8
40–49			41	16.3
Gender				
Male			126	50
Female			126	50
Race				
Malay			214	84.9
Chinese			4	1.6
Indian			26	10.3
Others			8	3.2
Religion				
Islam			218	86.5
Buddhism			4	1.6
Hinduism			22	8.7
Christianity			4	1.6
Others			4	1.6
Educational Level				
Primary/Secondary school			43	17.1
Certificate or Diploma			98	38.9
Degree			86	34.1
Master			22	8.7
Doctor of Philosophy			3	1.2
Household Income				
< RM1000			4	1.6
RM1001–3000			61	24.2
RM3001–5000			112	44.4
RM5001–10000			55	21.8
> RM10000			20	7.9
Duration of marriage				
1–2 years			4	1.6
3–5 years			35	13.9
> 5 years			213	84.5

Table 2. Ferti-QoL Score Among Childless Couples Undergoing Infertility Treatment (N = 252)

Fertility Quality of Life	Husband (n = 126)	Wives (n = 126)	Childless couples (N = 252)	Mean different (95% CI)	t-statistic (pdf)	Effect size	p
	Mean (SD)	Mean (SD)	Mean (SD)				
Health Rate	3.67 (0.56)	3.40 (0.60)	3.54 (0.59)	0.27 (0.13; 0.41)	3.70 (250)	0.47	< 0.001*
Satisfied QoL	3.67 (0.61)	3.44 (0.64)	3.55 (0.63)	0.23 (0.76; 0.39)	2.93 (250)	0.12	0.04
Core Ferti-QoL	72.67 (6.55)	67.07 (5.26)	70.00 (6.56)	5.60 (4.13; 7.08)	7.49 (250)	0.90	< 0.001*
Mind-Body	76.13 (9.67)	66.00 (8.61)	71.07 (10.45)	10.13 (7.86; 12.41)	8.79 (250)	1.10	< 0.001*
Emotional	70.58 (9.19)	61.94 (6.90)	66.26 (9.20)	8.65 (6.63; 10.66)	8.44 (250)	1.06	< 0.001*
Relational	77.70 (7.66)	74.50 (6.11)	76.10 (7.10)	3.20 (1.48; 4.92)	3.67 (250)	0.46	< 0.001*
Social	67.40 (4.84)	66.02 (4.83)	66.71 (4.87)	1.38 (0.18; 2.58)	2.26 (250)	0.29	0.025*
Treatment Ferti-QoL	73.13 (2.41)	70.32 (3.39)	71.73 (3.26)	2.82 (2.09; 3.55)	7.60 (250)	0.96	< 0.001*
Environmental	73.75 (2.98)	73.15 (3.81)	73.45 (3.43)	0.60 (-0.25; 1.44)	1.38 (250)	0.17	0.169
Tolerability	72.52 (4.53)	67.48 (5.94)	70.00 (5.85)	5.04 (3.73; 6.35)	7.57 (250)	0.95	< 0.001*
Total All FertiQoL	73.06 (4.51)	68.75 (4.17)	70.91 (4.84)	4.31 (3.22; 5.39)	7.87 (250)	0.99	< 0.001*

Note: Data was presented as mean (SD); Independent t-test p-value < 0.05*

Table 3. Stress, Anxiety, and Depression Level Among Childless Couples Undergoing Infertility Treatment (N = 252)

Psychological Distress Status	n (%)			p
	Total (N = 252)	Husband (n = 126)	Wive (n = 126)	
Stress level (Mean [SD])	17.25 (3.55)	15.14 (2.92)	19.35 (2.88)	< 0.001*
Normal	13 (5.2)	12 (9.5)	1 (0.8)	
Mild	159 (63.1)	96 (76.2)	63 (50)	
Moderate	80 (31.7)	18 (14.3)	62 (49.2)	
Anxiety level (Mean [SD])	5.82 (2.97)	4.02 (3.20)	7.61 (1.01)	< 0.001*
Normal	104 (41.3)	77 (61.1)	27 (21.4)	
Mild	148 (78.6)	49 (38.9)	99 (78.6)	
Depression level (Mean [SD])	8.20 (3.40)	5.68 (2.35)	10.72 (2.21)	< 0.001*
Normal	131 (52)	106 (84.1)	25 (19.8)	
Mild	100 (39.7)	20 (15.9)	80 (63.5)	
Moderate	21 (8.3)	-	21 (16.7)	

Note: Data was presented in frequency (%) and mean (SD); chi-square test p < 0.05

and with an average household income of RM 3001–RM 5000 (n = 112, 44.4%). The majority of the participants had been married more than five years (84.5%).

Table 2 displays the QoL scores of infertile couples, categorized by gender. The husbands achieved substantially higher total Ferti-QoL scores (73.06; SD 4.51) than the wives (68.75; SD 4.17; p < 0.001). Most of the core Ferti-QoL domains on the husbands were found significantly higher than the wives: mind-body (76.13 [SD 9.67] vs. 66.00 [SD 8.61], p < 0.001); emotional (70.58 [SD 9.19] vs. 61.94 [SD 6.90], p < 0.001); relational (77.70 [SD 7.66] vs. 74.50 [SD 6.11], p < 0.001); and social (67.40 [SD 4.84] vs. 66.02 [SD 4.83], p < 0.001). Nevertheless, the score did not show statistical significance in one aspect of treatment tolerability.

Table 4. Associated Factors of Quality of Life (Ferti-QoL)

Total all Ferti-QoL	Simple Linear Regression		Multiple Linear Regression	
	[ba] (95% CI)	p-value	[bb] (95% CI)	p-value
Age	-0.87 (-2.11, 0.37)	0.17*		
Gender	-4.31 (-5.39, -3.22)	< 0.001*	-1.01 (-1.84, -0.91)	0.02**
Race	-0.55 (-1.26, 0.66)	0.13*		
Religious	-0.28 (-0.95, 0.39)	0.41		
Education Level	0.12 (-0.54, 0.79)	0.71		
Household Income	0.38 (-0.28, 1.04)	0.25*		
Duration of Marriage	-1.73 (-3.16, -0.30)	0.02*		
Stress	-1.68 (-1.91, -1.44)	< 0.001*	-0.87 (-1.28, -0.47)	< 0.001**
Anxiety	-3.16 (-3.75, -2.57)	< 0.001*	-0.47 (-0.92, -0.02)	0.04**
Depression	-1.62 (-1.81, -1.43)	< 0.001*	-1.10 (-1.32, -0.89)	< 0.001**

*p < 0.25
**p < 0.05
a Crude regression coefficient
b Adjusted regression coefficient
Enter multiple linear regression method applied. Model assumptions are fulfilled.
No multicollinearity detected. There were no interaction variables.
Coefficient of determination (R2) = 0.635
Final model equation totals all FertiQoL in Quality of Life = 79.99 - (1.01*Gender) - (0.87*Stress) - (0.47*Anxiety) – (1.10* Depression

Table 3 displays the extent of psychological distress, including stress, anxiety, and depression on the infertile couples. The average means (SD) for stress, anxiety, and depression found on the husbands and wives were: stress: 19.35 vs. 15.14 ($p < 0.001$); anxiety: 7.61 vs. 4.02 ($p < 0.001$); depression: 10.72 vs. 5.68 ($p < 0.001$). Husbands and wives showed significant differences in scores across all three sub-scales of DASS-21. Wives exhibited significantly elevated levels of stress ($p < 0.001$), anxiety ($p < 0.001$), and depression ($p < 0.001$) in comparison to husbands.

The factors pertaining to the quality of life of the infertile couples undergoing the treatment are succinctly outlined in Table 4. Independent variables included sociodemographic for tests such as gender, age, race, religion, educational level, household income, duration of marriage, and psychological distress. The dependent variable was the mean of the total Ferti-QoL scores. In this study, the mean QoL score was 70.91 (SD 4.84).

Five factors were significant at p-value ≤ 0.05 in univariable analysis using simple linear regression. Gender, duration of marriage, stress, anxiety, and depression were found to be related to total all Ferti-QoL among childless couples undergoing infertility treatment. Three factors were found to be significant at p-value ≤ 0.25. A higher p-value was chosen when selecting variables into multiple linear regression, so more variables could be selected to ensure important variables were not left out. The three other factors include age, race, and household income. Variables were selected for the preliminary main effect model using stepwise, backward, forward, and entered models with a removal p-value of 0.10 and an entering p-value of 0.05. The entered method was used to select the preliminary main effect model, which was then tested for multicollinearity.

The confidence interval was narrow, the standard error was tiny in comparison to each b value, and multicollinearity was not present. This indicates that the regression model is performing well, providing precise and reliable estimates regarding the effects of each predictor variable, and the overall fit of the model is strong. The preliminary final model was developed, and its assumptions were further exami-

ned. Because the samples were independent, the likelihood of each participant being selected for the study was equivalent. To assess the model's overall linearity and equal variance, a scatter diagram depicting residuals against predicted mean values was generated. The residual histogram exhibited a normal distribution. The model fulfilled every single assumption. With an R2 value of 63.5%, the model demonstrates an accuracy of discrimination in 63.5% of the instances.

In the end, the final model was constructed, and Table 4 demonstrated that a factor related to total all Ferti-QoL was gender, stress, anxiety, and depression. A result from multiple linear regression analysis showed a significant linear negative relationship between gender, stress, anxiety, and depression with total all Ferti-QoL. The gender in this study refers to wives with infertility. Wives with infertility decreased total all Ferti-QoL score by 1.01 unit compared to husbands (adjusted $\beta = 1.01$; 95% CI -1.84, -0.91; $p < 0.02$).

A significant linear negative relationship exists between stress and total all Ferti-QoL scores. Those with one stress score have 0.87 units less in total all Ferti-QoL scores (adjusted $\beta = 0.87$; 95% CI -1.28, -0.47; $p < 0.001$). There is a significant linear negative relationship between anxiety and total all Ferti-QoL scores. Those who have 1 score anxiety have 0.47 units less in total all Ferti-QoL scores (adjusted $\beta = 0.47$; 95% CI -0.92, -0.02; $p < 0.04$). There is a significant linear negative relationship between depression and total all Ferti-QoL scores. Those with one score depression have 1.10 units less in total all Ferti-QoL score (adjusted $\beta = 1.10$; 95% CI -1.32, -0.89; $p < 0.001$).

Sixty-three percent (63.5%) of the variations in all Ferti-QoL were explained by gender, stress, anxiety, and depression according to the multiple linear regression model (R2 = 0.635). Overall, the results demonstrate that gender, stress, anxiety, and depression significantly affect Ferti-QoL scores. Wives with infertility have lower Ferti-QoL scores compared to husbands, and increased levels of stress, anxiety, and depression are associated with further reductions in these scores. The multiple linear regression model indicates that 63.5% of the variation in Ferti-QoL scores is explained by the variables gender, stress, anxiety, and depression ($R^2 = 0.635$). The remaining 36.5% of the variation could be due to other factors not included in the model or due to random variability.

Discussion

This study revealed that the mean Ferti-QoL scores among 126 infertile couples undergoing IVF were lower than those reported in a previous local study by Ariffin et al. (2020), but interestingly similar to Priangga et al. (2017) findings, which may be explained by the shared linguistic and cultural roots between the two populations. In contrast, studies from India and Nepal reported even lower Ferti-QoL scores (Desai & Gundabattula, 2019; Shakya, 2022). The discrepancies may be attributed to several factors such as study settings, participants' characteristics, cultural influences, methodological differences, and timing of data collection such as different study settings, including the quality of healthcare facilities and access to support services which can influence participants' perceptions of their QoL. Moreover, the variations in sample characteristics, such as age, duration of infertility, and socioeconomic status, may affect outcomes.

Additionally, cultural or societal influences, such as the level of community support or stigma surrounding childlessness, can impact psychological well-being and QoL. Methodological differences, such as variations in sample size, data collection methods, and administration of the Ferti-QoL scale, could also contribute to differing results. The timing of data collection may play a role, as changes in healthcare policies and societal attitudes towards infertility over time might influence the findings. The differences in QoL scores obtained in this study compared to previous research may be attributed to several key factors, including study set-

tings, participant characteristics, cultural background, methodological differences, and timing of data collection. A thorough examination of these factors is important to understand the context of the study findings and to identify issues that may affect the comparability of results across different studies.

Firstly, variations in study settings, particularly in terms of the quality of fertility treatment facilities and access to support services such as psychological counselling, may influence participants' treatment experiences and their perceptions of quality of life. This study was conducted within the local healthcare context, which may differ in resources and capacity compared to other countries, thereby affecting how participants perceive the care they receive.

Secondly, participant characteristics such as age, duration of infertility, and socioeconomic background play an important role in shaping emotional resilience and coping mechanisms during treatment. For example, younger individuals or those with higher income levels may be more optimistic and better equipped to manage the financial and emotional pressures of infertility treatment compared to those in more vulnerable situations.

Thirdly, cultural and societal norms also contribute to the variation in QoL scores. In cultures where having children is strongly emphasized as a symbol of marital success and social acceptance, childless couples may face higher levels of psychosocial stress, including stigma, discrimination, or social isolation. These factors directly affect emotional and mental well-being, and consequently, impact the QoL domains being measured.

Furthermore, methodological differences between studies such as sample size, data collection methods (e.g., surveys, interviews, or mixed methods), and the administration of tools like the Ferti-QoL scale may also contribute to differing outcomes. This study employed a quantitative approach using structured questionnaires, which may yield different response patterns compared to qualitative studies that allow for more in-depth exploration of individual experiences.

Finally, the timing of data collection is also relevant in influencing study outcomes. Changes in healthcare policies, increasing awareness of infertility, and advancements in fertility treatment technologies over time can affect how participants perceive their experiences and quality of life. For instance, government support for fertility treatment or greater societal acceptance of IVF may have a positive impact on QoL scores in the current study compared to earlier research.

Consistent with prior research (Ariffin et al., 2020; Ibrahim et al., 2021; Musa et al., 2014), this study found that women generally have lower QoL scores and higher levels of psychological distress compared to men, indicating that women are more impacted both physically and emotionally. This can be attributed to a significant number of female participants exhibiting hormonal imbalances, endometriosis, and other health conditions that increase susceptibility to infertility. This study adds a new dimension to those findings by revealing that a significant number of female participants suffered from hormonal imbalances, endometriosis, and other reproductive health issues, which not only contributed to infertility but also increased the emotional and physical burden throughout the treatment process.

According to Musa et al. (2014), wives reported experiencing these conditions at levels 1.5 to 3 times greater than their husbands. This may be due to the historical tendency to place blame and responsibility on women for unsuccessful conception. In certain countries such as Iran (Taebi et al. 2021), infertility results in societal stigmatization, primarily targeting women. In this study, wives showed significantly lower QoL scores as infertile women in Malaysia face emotional stress, anxiety, depression, and poorer health.

Another significant factor is the age of female

participants, especially those over 40, who are more susceptible to stress, anxiety, and depression due to infertility. The decline in the quality and quantity of eggs in a woman's ovaries becomes more apparent with increasing age. Infertility significantly impacts the psychological well-being and emotional state of couples, leading to concentration difficulties, guilt, and a pessimistic outlook. Female participants display a higher tendency for emotional experiences such as heightened sensitivity, sadness, despair, anger, and jealousy. The issue also affects marital relationships and is influenced by social and environmental factors stemming from family, social, and societal contexts.

Similar to previous studies by Ariffin et al. (2020), Maroufizadeh et al. (2017), and Royani et al. (2019), this study found that age, educational level, duration of marriage, and household income were not statistically significant to QoL. Older women reported higher scores on the core Ferti-QoL, mind-body, emotional, and social subscales. On the contrary, elder women exhibited marginally lower relational scores in comparison to younger women. Overall, since women who are 35 years or older and experience infertility are deemed too elderly to become pregnant, their sexual relationship appears to have less purpose.

The possible explanation from this study is that when the infertile couple get older, social pressure can slowly be overcome, and they may seek out support from family and friends. They realise that infertility is not a disgrace and sometimes happened beyond their control. The difference in results between the current study and Aduloju et al. (2018) regarding age and QoL may be due to cultural, societal, and healthcare factors. Cultural expectations and societal pressure to have children in Nigeria might be more intense, affecting women's QoL regardless of age. Differences in healthcare support, demographic characteristics, and perceptions of age-related fertility could also play roles.

Suleiman et al. (2023) found a significant and positive correlation between the QoL of infertile women and a higher level of education. It is possible that individuals with a higher level of education experience less embarrassment than those with a lower level of education. In addition, individuals with higher level of education employ superior problem-solving abilities, develop strategies for managing everyday stressors, and employ innovative approaches to address novel challenges.

However, according to Yusuf (2016), depression, anxiety, and stress ratings were greater in infertile females regardless of their level of education. The level of education may not show a statistically significant relationship with QoL due to several factors such as individual adaptation, social and cultural roles, the availability of medical and psychological support, variations in emotional response patterns, and a uniform awareness of infertility. These factors indicate that educational level is not the sole determinant of QoL among infertile women, and other factors like social support, culture, and access to information and treatment play a larger role in influencing QoL.

The duration of marriage does not show a statistically significant relationship with QoL. Studies by Sut and Kaplan (2015) found that women's QoL was negatively impacted by long-term infertility. There is a significant negative correlation between the overall and core Ferti-QoL scores (emotional, mind-body, and social subscales) and the duration of trying to conceive. This outcome may be influenced by social and cultural norms, where a woman is viewed as a failure if a couple is childless. Men can marry multiple wives, causing women to feel insecure and experience a lower QoL. Other research found no correlation between infertile women's quality of life and how long their infertility lasted (Royani et al., 2019).

Household income may not have a significant impact on the QoL among infertile couples because, although the couples are financially stable, other factors such as access to subsidized

healthcare, financial support from family, the couple's adaptability and resilience, as well as cultural norms that prioritize family and community values over financial status, also play important roles. These factors indicate that income alone is not the main determinant of QoL, as psychological and social influences are more influential. Although economic imbalance can cause stress and anxiety among infertile couples, the financial burden usually only occurs during the period of IVF treatment.

The study had multiple limitations. Firstly, it is important to acknowledge the limitations associated with the cross-sectional study design. The precise aetiology of psychological discomfort and the factors associated with psychological distress and quality of life in infertile couples cannot be definitively ascertained. The most optimal study design is a longitudinal case-control study. Furthermore, the study used a limited sample size, which only provided a partial representation of the entire population of infertile couples in Malaysia. The potential for obtaining divergent outcomes exists if the study were replicated within a private hospital or another geographical region within the country. Furthermore, the study is limited by the inability to control several confounding variables, primarily due to constraints in time and insufficient human resources.

The strength of this study lies in its knowledge implications, as it provides important information on the sociodemographic and psychological distress factors that influence the quality of life of infertile couples. By controlling for factors such as previous IVF attempts, duration of infertility, or social support, the impact of psychological distress on quality of life can be better isolated. This helps to reduce bias and offers a clearer picture of the specific factors affecting quality of life. To the best of the authors' knowledge, this is the first local study in Malaysia to examine the relationship between stress, anxiety, and depression with the quality of life among infertile couples undergoing IVF treatment and to attempt to identify the possible associated factors.

Conclusion

The study highlights significant gender-based disparities in psychological and quality of life among infertile couples undergoing IVF treatment in Malaysia. It is found that women have higher level of stress, anxiety, and depression while also suffer from lower quality of life compared to men. These findings emphasize the critical importance of addressing mental health concerns, advocating for nurse's involvement in supporting the emotional well-being of couples throughout the treatment process. Nurses are positioned to provide targeted interventions and understand the bio-psychosocial dimensions influencing these couples.

Future research should focus on using a longitudinal case-control design to explore the long-term effects of psychological distress and quality of life changes of infertility and identify the causative aspects of it. Expanding the study population to include diverse geographical regions and private healthcare settings in Malaysia would provide more comprehensive view of infertility-related psychological issues. Additionally, developing accessible and affordable models for mental health support within fertility clinics should be prioritized to ensure comprehensive medical and psychological support tailored to the couple's needs.

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References

Aduloju, O.P., Olaogun, O.D., & Aduloju, T. (2018). Quality of life in women of reproductive age: A comparative study of infertile and fertile women in a Nigerian tertiary centre. *Journal of Obstetrics and Gynaecology: The Journal of The Institute of Obstetrics and Gynaecology, 38* (2), 247–251. doi: 10.1080/01443615.2017.1347916.

Anokye, R., Acheampong, E., Mprah, W.K., Ope, J.O., & Barivure, T.N. (2017). Psychosocial effects of infertility among couples attending St. Michael's Hospital, Jachie-Pramso in the Ashanti Region of Ghana. *BMC Research Notes, 10* (1)*,* 690. doi: 10.1186/s13104-017-3008-8.

Ariffin, F., Daud, S., Zainuddin, A.A., & Ramli, R. (2020). Predictors of quality of life in individuals seeking infertility treatment: A Malaysian FertiQoL study. *Environment-Behaviour Proceedings Journal, 5* (SI3), 261–267. doi: 10.21834/ebpj.v5iSI3.2565.

Boivin, J., Takefman, J., & Braverman, A. (2011). The fertility quality of life (FertiQoL) tool: Development and general psychometric properties. *Human Reproduction, 26* (8), 2084–2091. doi: 10.1093/humrep/der171.

Borght, M.V., & Wyns, C. (2018). Fertility and infertility: Definition and epidemiology. Clinical Biochemistry, 62, 2–10. doi: 10.1016/j.clinbiochem.2018.03.012.

Cheng, C.Y., Stevenson, E.L., Yang, C.T., & Liou, S.R. (2018). Stress and quality of life for Taiwanese women who underwent infertility treatment. *Journal of Obstetric, Gynecologic and Neonatal Nursing, 47* (4), 498–508. doi: 10.1016/j.jogn.2018.03.005.

Department of Statistics Malaysia (DOSM). (2019). *Vital statistics, Malaysia, 2018*. Department of Statistics Malaysia Official Portal. Retrieved from: https://www.dosm.gov.my/site/downloadrelease?id=vital-statistics-malaysia-2018&lang=English&admin_view=

Desai, H.J., & Gundabattula, S.R. (2019). Quality of life in Indian women with fertility problems as assessed by the FertiQoL questionnaire: A single center cross sectional study. *Journal of Psychosomatic Obstetrics and Gynecology, 40* (1), 82–87. doi: 10.1080/0167482x.2017.1405257.

Hess, R.F., Ross, R. & Gililland, J.L, (2018). Infertility, psychological distress, and coping strategies among women in Mali, West Africa: A mixed-methods study. *African Journal of Reproductive Health, 22* (1), 60–72. doi: 10.29063/ajrh2018/v22i1.6.

Ibrahim, N., Mohamed, S., Ismail, Z., & Salleh, M.R. (2021). Psychological distress and quality of life of Malaysian infertile couples. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 10* (1), 61–67. doi: 10.18203/2320-1770.ijrcog20205755.

Sut, H.K., & Kaplan, P.B. (2015). Quality of life in women with infertility via the FertiQoL and the hospital anxiety and depression scales. *Nursing and Health Sciences, 17* (1), 84-89. doi: 10.1111/nhs.12167.

Karaca, A., & Unsal, G. (2015). Psychosocial problems and coping strategies among Turkish women with infertility. *Asian Nursing Research, 9* (3), 243–250. doi: 10.1016/j.anr.2015.04.007.

Kamaruddin, Z., Manaf, Z.I.A., & Kadir, N.A. (2020). The necessity for the formulation of an online family dispute resolution management framework in Malaysia. *Journal of Information Systems and Digital Technologies, 2* (1), 1–15. doi: 10.31436/jisdt.v2i1.125.

Lovibond, P.F. (1998). Long-term stability of depression, anxiety, and stress syndromes. *Journal of Abnormal Psychology, 107* (3), 520–526. doi: 10.1037//0021-843x.107.3.520.

Maroufizadeh, S., Ghaheri, A., Amini, P., & Samani, R.O. (2017). Psychometric properties of the fertility quality of life instrument in infertile Iranian women. *International Journal of Fertility and Sterility, 10* (4), 371–379. doi: 10.22074/ijfs.2016.4696.

Musa, R., Ramli, R., Yazmie, A.W.A., Khadijah, M.B., Hayati, M.Y., Midin, M., Nik Jaafar, N.R., Das, S., Sidi, H., & Ravindran, A. (2014). A preliminary study of the psychological differences in infertile couples and their relation to the coping styles. *Comprehensive Psychiatry, 55 Suppl 1,* S65–S69. doi: 10.1016/j.comppsych.2013.01.001.

Priangga, M.D., Pratama, G., Maidarti, M., Harzif, A.K., & Wiweko, B. (2017). Validity of the Fertility Quality of Life (FertiQoL) questionnaire in Indonesian infertile women. *KnE Medicine, 1* (1), 202–206. doi: 10.18502/kme.v1i1.642.

Royani, Z., Heidari, M., Vatanparast, M., Yaghmaei, F., Sarcheshme, A.K., & Majomerd, J.K. (2019). Predictors of quality of life in infertile couples. *Journal of Menopausal Medicine, 25* (1), 35–40. doi: 10.6118/jmm.2019.25.1.35.

Shakya, S. (2022). *Predictors of fertility quality of life in infertile patients visiting infertility center in Kathmandu, Nepal: A cross-sectional study* [Master's thesis]. Chulalongkorn University. doi: 10.58837/CHULA.THE.2022.320.

Sham, F., Yunus, N., Hasimin, N.S., Saad, R.M., Razali, S., & Yusof, S. (2020). Anxiety and depression among infertile couple in Malaysia. *Health Scope, 3* (1), 78–81.

Shani, C., Yelena, S., Reut, B.K., Adrian, S., & Sami, H. (2016). Suicidal risk among infertile women undergoing in-vitro fertilization: Incidence and risk factors. *Psychiatry Research, 240*, 53–59. doi: 10.1016/j.psychres.2016.04.003.

Suleiman, M., August, F., Nanyaro, M.W., Wangwe, P., Kikula, A., Balandya, B., Ngarina, M., & Muganyizi, P. (2023). Quality of life and associated factors among infertile women attending infertility clinic at Mnazi Mmoja Hospital, Zanzibar. *BMC Women's Health, 23* (1), 400. doi: 10.1186/s12905-023-02536-4.

Taebi, M., Kariman, N., Montazeri, A., & Majd, H.A. (2021). Infertility stigma: A qualitative study on feelings and experiences of infertile women. *International Journal of Fertility and Sterility, 15* (3), 189–196. doi: 10.22074/IJFS.2021.139093.1039.

World Health Organization (WHO). (2018). *International classification of diseases, 11th revision (ICD-11).* Retrieved from: https://www.who.int/standards/classifications/classification-of-diseases

Yusuf, L. (2016). Depression, anxiety, and stress among female patients of infertility: A case-control study. *Pakistan Journal of Medical Sciences, 32* (6), 1340–1343. doi: 10.12669/pjms.326.10828.