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Learned Helplessness and Its Associated Factors Among Patients With Recurrent Implantation Failure Undergoing In Vitro Fertilization and Embryo Transfer: A Cross-Sectional Study

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Research Article

Keywords: recurrent implantation failure patients, learned helplessness, negative emotion, social support, associated factors

Posted Date: November 23rd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11466137/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Infertility poses a significant challenge to reproductive health among individuals of reproductive age. Although in vitro fertilization and embryo transfer (IVF-ET) offers an effective treatment option, some patients fail to achieve clinical pregnancy despite multiple embryo transfer attempts, a condition known as recurrent implantation failure (RIF). Guided by stress and coping theory, this study aims to investigated the status of learned helplessness and its associated factors among patients with RIF, thereby providing an evidence base for developing targeted nursing interventions in clinical practice.

Methods

Using convenience sampling, 228 patients with RIF who attended the Reproductive Center Clinic of Guangdong Women and Children Hospital between December 2025 and September 2026 were recruited. They were investigated using a general information questionnaire, the Learned Helplessness Scale (LHS), the General Self-Efficacy Scale (GSE), the Perceived Social Support Scale (PSSS), and the Simplified Coping Style Questionnaire (SCSQ).

Results

The total learned helplessness score of the RIF patients was 63.96 ± 6.40, which was higher than the theoretical midpoint of the scale (54 points), indicating a moderately high level. Multiple linear regression analysis showed that age, educational level, per capita monthly household income, number of previous pregnancy attempts, general self-efficacy, perceived social support, and coping style were associated factors of learned helplessness in RIF patients (all $P < 0.05$).

Conclusion

Learned helplessness among RIF patients is at a moderately high level. Healthcare providers should give priority to older patients, those with lower educational attainment and lower income, those preparing for their first pregnancy, those with lower self-efficacy and perceived social support, and those with a marked tendency toward negative coping, and should provide stratified psychological support tailored to individual characteristics in order to improve their psychological well-being.

Background

Infertility is an important disease affecting the reproductive health of people of childbearing age. In vitro fertilization and embryo transfer (IVF-ET) serves as a major treatment for infertility. However, some patients fail to achieve clinical pregnancy after multiple embryo transfers, a condition defined as

recurrent implantation failure (RIF), which accounts for approximately 10% of IVF-ET treatment outcomes worldwide.[1] During treatment, patients with RIF not only undergo repeated invasive procedures and bear the burden of prolonged treatment and medical expenses, but also face multiple pressures including family fertility expectations, social doubts and infertility-related stigma. These stressors render them vulnerable to negative emotions such as anxiety and depression, gradually triggering feelings of helplessness and exerting adverse effects on their physical and mental health.[2–4] Learned helplessness is a critical indicator reflecting individual psychological status. It refers to a psychological state and behavioral tendency in which individuals gradually develop a sense of powerlessness after long-term exposure to unpredictable or uncontrollable adverse events, believing that their efforts can hardly change the outcomes.[5] It may reduce patients' treatment adherence and self-management capacity, and further induce severe psychological problems such as anxiety and depression.[6] The stress-coping theory proposes that individuals'psychological status is not only associated with stressful events they experience, but also closely related to their cognitive appraisal of stress, adopted coping styles and available social support.[7] At present, domestic studies on learned helplessness mainly focus on patients with cancer and chronic diseases,[8,9] while research concerning learned helplessness among RIF patients remains scarce. Therefore, guided by the stress-coping theory, this study investigated the status of learned helplessness in RIF patients and explored the relationships between relevant factors and learned helplessness, so as to provide evidence for developing targeted clinical nursing interventions.

Methods and Analysis

A total of 228 patients with recurrent implantation failure (RIF) were enrolled using a convenience sampling method. Participants were recruited from the Reproductive Center Outpatient Department of Guangdong Women and Children Hospital from December 2025 to September 2026.The inclusion criteria were as follows: (1) diagnosis of RIF consistent with the criteria specified in the 2023 Chinese Expert Consensus on the Clinical Diagnosis and Management of Recurrent Implantation Failure;[10] (2) basic reading and verbal communication abilities; (3) ability to understand and complete the questionnaires independently and provision of written informed consent.The exclusion criteria included: (1) severe chronic diseases, malignant tumors, or physical dysfunction; (2) a history of psychiatric disorders; (3) experience of major life events or traumatic events recently.According to the sample size estimation principle, the sample size should be at least 10 times the number of independent variables.[11] In this study, 18 independent variables were included. Considering a 5% invalid response rate, the minimum required sample size was 190 cases. Finally, 228 RIF patients were enrolled in the present study. This study was approved by the Ethics Committee of Guangdong Women and Children Hospital (No. 20250101).

The General Information Questionnaire was self-developed by the researchers based on a comprehensive literature review. It covered two parts: demographic characteristics: age, BMI, residential location, educational level, employment status, per capita monthly household income, type of

marriage, family living arrangement, and whether the participant was an only child; disease-related characteristics: pregnancy attempt parity, type of infertility, duration of infertility, number of previous embryo transfer cycles, and number of remaining embryos.The Learned Helplessness Scale was originally developed by Quinless et al. in 1988,[12] and its Chinese version adapted by Wu Xiaoyan et al. was adopted in this study.[13]The scale consists of two dimensions: helplessness (13 items) and hopelessness (5 items), with a total of 18 items. A 5-point Likert scoring method was used, with scores ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranges from 18 to 90, and higher scores indicate greater learned helplessness. The original scale had a Cronbach's α coefficient of 0.932, and the Cronbach's α coefficient of this scale in the present study was 0.866.The Perceived Social Support Scale was developed by Zimet et al. and translated into Chinese by Jiang Qianjin,[14,15] and its Chinese version consists of 12 items covering three dimensions: family support, friend support, and other support.Items are rated on a 7-point Likert scale from 1 (very strongly disagree) to 7 (very strongly agree). The total score ranges from 12 to 84, and higher scores indicate higher perceived social support. The Cronbach's α coefficients of the Chinese version for the total scale and each dimension were 0.882–0.921, and the Cronbach's α coefficient in this study was 0.861.The Simplified Coping Style Questionnaire was compiled by Xie Yaning,[16] and it comprises two subscales: positive coping and negative coping.Each item is scored from 0 to 3. The subscale score is the mean score of all items within the corresponding subscale, and higher scores indicate a greater tendency to adopt that type of coping strategy. The Cronbach's α coefficient of the original Chinese questionnaire was 0.900. In the present study, the Cronbach's α coefficient was 0.802 for the positive coping dimension and 0.721 for the negative coping dimension.The General Self-Efficacy Scale was developed by Schwarzer and translated and revised into Chinese by Zhang et al..[17,18]It is a unidimensional scale with 10 items, each scored from 1 to 4. The total score ranges from 10 to 40, and higher scores reflect stronger self-efficacy. The Cronbach's α coefficient of the Chinese scale was 0.910, and the Cronbach's α coefficient in this study was 0.877.

All investigators received standardized training prior to data collection and strictly followed the inclusion and exclusion criteria when recruiting participants. Informed consent was obtained from all participants before questionnaire administration, and standardized instructions regarding the study purpose and questionnaire completion were provided. Completed questionnaires were checked on-site for completeness, and any missing items were immediately clarified and supplemented. For participants who were unable to complete the questionnaire independently, the questionnaire was completed through face-to-face interviews conducted by the researchers.After obtaining written informed consent from the patients, paper questionnaires were distributed on-site by researchers. Before formal completion, researchers explained the questionnaire instructions and notes to participants in detail and provided necessary guidance during filling. Upon questionnaire completion, researchers immediately checked for missing items, and valid questionnaires were collected on-site after confirmation. A total of 235 questionnaires were distributed, and 228 valid questionnaires were recovered, with an effective response rate of 97.0%.

SPSS 26.0 software was used for statistical analyses. After normality testing, normally distributed measurement data were presented as mean ± standard deviation. Independent-samples t-test was applied for comparisons between two groups, one-way analysis of variance (ANOVA) for comparisons among multiple groups, and Pearson correlation analysis to examine correlations between variables. Enumeration data were described as frequencies and percentages. Multiple linear regression analysis was performed with the total score of learned helplessness among RIF patients as the dependent variable to identify its associated factors. All statistical tests were two-tailed, and a P value < 0.05 was considered statistically significant.This study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies.

Results

A total of 228 patients with recurrent implantation failure were included in this study. The scores of main scales and their dimensions are shown in Table 1. The total score of learned helplessness among patients was 63.96 ± 6.40, which was higher than the theoretical midpoint of 54 points of the Learned Helplessness Scale. The score of helplessness dimension was 50.12 ± 4.15, and the score of hopelessness dimension was 13.83 ± 2.80.

Table 1
Scores of main scales and their dimensions among patients with recurrent implantation failure (n = 228)

Item	Total score	Item mean score
PSSS family support	21.45 ± 3.15	5.36 ± 0.79
PSSS friend support	18.82 ± 3.11	4.71 ± 0.78
PSSS other support	19.32 ± 3.55	4.83 ± 0.89
Total PSSS score	59.59 ± 8.10	4.97 ± 0.68
Positive coping	22.19 ± 5.43	1.85 ± 0.45
Negative coping	11.19 ± 4.02	1.40 ± 0.50
General self-efficacy	23.89 ± 5.21	2.39 ± 0.52
Total learned helplessness score	63.96 ± 6.40	3.55 ± 0.36
Helplessness dimension	50.12 ± 4.15	3.86 ± 0.32
Hopelessness dimension	13.83 ± 2.80	2.77 ± 0.56

Univariate Analysis of the Total Learned Helplessness Score Univariate analysis was conducted with the total learned helplessness score as the dependent variable. The results demonstrated that age group, educational level, employment status, per capita monthly household income and pregnancy attempt parity were associated with the total learned helplessness score (P<0.05). No statistically significant

differences in the total learned helplessness score were found regarding BMI, residential location, marital status, living arrangement, only-child status, type of infertility, duration of infertility, number of embryo transfer cycles and number of remaining embryos (P>0.05), as presented in Table 2.

Table 2
Univariate analysis of total learned helplessness score in patients with recurrent implantation failure (n = 228)

Item	Number of cases	Score($\bar{x}\pm s$)	t/F	P
Age			**3.889**	**0.022**
<30 years	**55**	**62.27 ± 6.03**		
30–34 years	**110**	**63.90 ± 5.87**		
≥35 years	**63**	**65.52 ± 7.26**		
BMI(kg/m²)			**0.847**	**0.469**
<18.5	**13**	**63.23 ± 7.45**		
18.5–23.9	**119**	**64.18 ± 6.63**		
24.0–27.9	**79**	**64.22 ± 6.05**		
≥28.0	**17**	**61.71 ± 5.54**		
Residence			**−1.482**	**0.140**
Urban	**70**	**63.01 ± 6.25**		
Rural	**158**	**64.37 ± 6.44**		
Educational level			**6.939**	**0.001**
Junior high school or below / Technical secondary school	**78**	**65.96 ± 6.41**		
College / Bachelor's degree	**113**	**62.54 ± 6.12**		
Master's degree or above	**37**	**64.05 ± 6.24**		
Employment status			**−2.571**	**0.011**
Employed	**180**	**63.40 ± 6.44**		
Unemployed	**48**	**66.04 ± 5.87**		

Item	Number of cases	Score($\bar{x}\pm s$)	t/F	P
Age			3.889	0.022
<30 years	55	62.27 ± 6.03		
Per capita household income			10.186	0.001
≤3000 CNY	31	67.87 ± 6.11		
3001–5000 CNY	62	64.15 ± 6.13		
5001–10000 CNY	98	64.16 ± 6.34		
≥10001 CNY	37	59.81 ± 4.94		
Marital status			−0.459	0.646
First marriage	202	63.89 ± 6.50		
Remarriage	26	64.50 ± 5.67		
Living arrangement			0.485	0.628
Living alone as a couple	137	64.12 ± 6.06		
Living with others	91	63.70 ± 6.91		
Only child			0.559	0.577
Yes	72	64.31 ± 6.76		
No	156	63.79 ± 6.25		
Pregnancy attempt parity			2.824	0.005
First pregnancy attempt	150	64.81 ± 6.04		
Second or more pregnancy attempts	78	62.32 ± 6.80		
Infertility type			−0.676	0.500

Item	Number of cases	Score($\bar{x}\pm s$)	t/F	P
Age			**3.889**	**0.022**
<30 years	**55**	**62.27 ± 6.03**		
Primary	**139**	**63.73 ± 6.50**		
Secondary	**89**	**64.31 ± 6.28**		
Duration of infertility			**0.746**	**0.457**
≤3 years	**140**	**64.21 ± 6.52**		
>3 years	**88**	**63.56 ± 6.23**		
Number of embryo transfer cycles			**0.435**	**0.648**
3 cycles	**110**	**64.34 ± 6.46**		
4–5 cycles	**79**	**63.46 ± 6.53**		
≥6 cycles	**39**	**63.90 ± 6.06**		
Number of remaining embryos			**0.740**	**0.478**
0–1	**75**	**64.01 ± 6.66**		
2–4	**106**	**63.51 ± 6.35**		
≥ 5	**47**	**64.87 ± 6.14**		

Pearson correlation analysis revealed that family support, friend support, other support and the total score of PSSS were negatively correlated with the total learned helplessness score (r = − 0.418, − 0.339, − 0.419 and − 0.476, respectively; all P < 0.001). General self-efficacy and positive coping were negatively correlated with the total learned helplessness score (r = − 0.478 and − 0.342, respectively; all P < 0.001), whereas negative coping was positively correlated with the total learned helplessness score (r = 0.396, P < 0.001).

The total learned helplessness score was set as the dependent variable. Variables with statistical significance in univariate analysis and psychological variables significantly correlated with the total

learned helplessness score were included in the multiple linear regression model. The regression model was statistically significant (F = 16.231, P < 0.001), with R^2 = 0.496 and adjusted R^2 = 0.466. Age ≥ 35 years, low educational level, low household income, first pregnancy attempt, low social support, poor positive coping, strong negative coping and low general self-efficacy were associated with the total learned helplessness score, as shown in Table 3.

Table 3
Multiple linear regression analysis of influencing factors for learned helplessness among patients with recurrent implantation failure (n = 228)

Variable	β	SE	β'	t	P	VIF
Constant	82.778	3.248	—	25.485	<0.001	—
Unemployed (reference: Employed)	0.890	0.800	0.057	1.112	0.268	1.108
30–34 years (reference: <30 years)	1.038	0.777	0.081	1.335	0.183	1.571
≥35 years (reference: <30 years)	3.004	0.873	0.210	3.442	<0.001	1.585
College/Bachelor's degree (reference: Low education group)	−1.921	0.711	−0.150	−2.704	0.007	1.314
Master's degree or above (reference: Low education group)	−1.363	0.961	−0.079	−1.418	0.158	1.308
3001–5000 CNY (reference: ≤3000 CNY)	−2.512	1.073	−0.175	−2.341	0.020	2.374
5001–10000 CNY (reference: ≤3000 CNY)	−2.027	1.019	−0.157	−1.988	0.048	2.651
≥10001 CNY (reference: ≤3000 CNY)	−4.835	1.216	−0.279	−3.976	<0.001	2.093
Second or more pregnancy attempts (reference: First pregnancy attempt)	−1.703	0.668	−0.126	−2.550	0.011	1.045
Total PSSS score	−0.165	0.044	−0.208	−3.704	<0.001	1.342
Positive coping	−0.153	0.064	−0.130	−2.385	0.018	1.261
Negative coping	0.313	0.085	0.197	3.681	<0.001	1.213
General self-efficacy	−0.274	0.071	−0.223	−3.854	<0.001	1.417
Note: R = 0.705, R^2=0.496, adjusted R^2=0.466, standard error of the estimate = 4.680, F = 16.231, P<0.001						

Discussion

The present study showed that the total score of learned helplessness in RIF patients was 63.96 ± 6.40, which was higher than the scale theoretical midpoint of 54 points, consistent with the findings reported by Ma Miaomiao among women with infertility.[19] Potential explanations were as follows. On the one hand, this phenomenon was associated with repeated embryo transfer failures experienced by RIF

patients. Stucki et al. demonstrated that patients with RIF continuously invest time,[20] money and energy in cycles of repeated transfers and failures without achieving the expected pregnancy outcomes. Such experiences gradually reduce their sense of control over treatment results, forming negative perceptions that efforts cannot change outcomes, and thereby triggering learned helplessness. On the other hand, it may be related to heavy fertility expectations from family and social pressure endured by RIF patients. Influenced by traditional fertility concepts and public opinion, childbearing not only fulfils patients' own fertility wishes but also carries expectations from spouses and family members, imposing greater psychological pressure on patients during repeated treatments.[21] Previous studies indicated that women with infertility tend to develop self-denial for failing to meet family fertility expectations and suffer pressure from inquiries of relatives and social evaluation, which may accumulate and induce feelings of helplessness over time.[22] In addition, with prolonged treatment cycles and the gradual decline of childbearing age, patients' concerns about subsequent pregnancy opportunities increase. Disappointment and frustration accumulated during long-term treatment further exacerbate learned helplessness. Accordingly, clinical staff should strengthen fertility health education for RIF patients and their families to help them correctly understand recurrent implantation failure and the uncertainty of pregnancy outcomes. Meanwhile, health lectures and family education could be adopted to guide family members to establish scientific fertility concepts and reduce pressure for conception, blame and negative comments, so as to alleviate learned helplessness among patients.

This study found that RIF patients aged ≥ 35 years had higher levels of learned helplessness. One possible reason was that female fertility and ovarian reserve decline with advancing age, accompanied by decreased pregnancy and live birth rates as well as elevated miscarriage risks,23 which may reduce patients' perceived controllability over assisted reproductive outcomes. Furthermore, repeated failures expose RIF patients to persistent treatment burdens and psychological stress.24 Patients aged ≥ 35 years may face prominent time pressure for childbearing and become more sensitive to uncertainties regarding remaining treatment opportunities, therapeutic effects and future pregnancy outcomes. Repeated examinations, treatments and waiting for results may foster negative beliefs that sustained efforts fail to change outcomes, thus increasing learned helplessness. Therefore, in clinical nursing practice, age ≥ 35 years can serve as a key screening indicator for psychological assessment among RIF patients. Before file establishment or initiation of the next treatment cycle, specialist nurses should evaluate patients' psychological status using appropriate psychological screening tools, and timely refer patients with abnormal screening results to the psychology department.

This study also revealed that RIF patients with college/bachelor's education had relatively lower learned helplessness, which may stem from disparities in processing treatment information and doctor-patient interactions across educational levels. The diagnosis and management of RIF involve abundant professional information including embryo quality, endometrial status, selection of treatment protocols and evaluation of pregnancy outcomes. Patients with higher educational attainment are more capable of understanding treatment procedures, risk probabilities, and advantages and disadvantages of different regimens. They can actively raise questions to medical staff and participate in treatment decision-

making, reducing the sense of powerlessness caused by information asymmetry and therapeutic uncertainty.25 In contrast, patients with lower education may encounter greater difficulties in comprehending knowledge related to fertility treatment,26 tend to passively receive treatment and lose control over the therapeutic process, which elevates learned helplessness. Hence, stratified health education should be implemented in clinical nursing. For patients with low educational levels, illustrated flowcharts and plain-language instruction sheets should be developed to explain current conditions, examination purposes, treatment steps, waiting periods and subsequent options. For patients with college education or above, evidence regarding treatment protocols and risk probabilities can be supplemented on the basis of routine education to encourage active questioning and shared decision-making.

Our results showed that RIF patients with low income had relatively higher learned helplessness, which was similar to the findings among postoperative oral cancer patients reported by Liu Yan et al..27 Patients with RIF usually undergo multiple examinations, medication, embryo transfers and waiting for pregnancy outcomes, accompanied by indirect costs such as transportation, work absence and care expenses. When patients cannot afford ongoing treatment or are uncertain whether they can continue subsequent therapy, they repeatedly weigh the choice between continuing and discontinuing treatment. Under uncertain therapeutic outcomes, persistent financial stress may induce feelings of helplessness.28 In comparison, patients with better economic conditions can afford necessary examinations and treatment, avoiding treatment interruption and disrupted life due to financial constraints, thereby maintaining stable treatment plans and psychological status. In clinical practice, reproductive specialist nurses may assist patients experiencing financial pressure to consult medical insurance services in hospitals or local medical insurance agencies regarding reimbursement policies for assisted reproduction.

This study found that RIF patients attempting their first pregnancy had higher learned helplessness. For patients trying to conceive their first child, childbearing is regarded as an important goal for marriage and family under the influence of traditional fertility values and family expectations. Repeated RIF failures expose them to dual pressure from treatment failure and unfulfilled social roles, generating intense feelings of failure and powerlessness.29 Secondly, patients attempting their first pregnancy lack direct experience of successful pregnancy and have no reference for uncertainties in treatment and pregnancy outcomes, making them more prone to worry and confusion.30 Thirdly, patients with existing children have established maternal identity and family roles through previous childbirth. Their self-worth and sense of family completeness do not fully depend on the current treatment, so the psychological impact of treatment failure is relatively mild. Clinically, RIF patients attempting their first pregnancy should be prioritized for psychological care.Specialist nurses can guide family members to adopt supportive communication, reduce urging, blame and comparison, and provide listening and companionship to ease patients' psychological burden. Routine psychological care should also be delivered to patients with existing children, with attention paid to the stress of secondary infertility and repeated conception attempts.

The present study indicated that higher general self-efficacy was associated with lower learned helplessness among RIF patients, consistent with the results reported by Huang et al. in lung cancer patients.31 A possible explanation is that patients with high self-efficacy tend to perceive a single failure as a staged problem requiring further analysis and adjustment, and continue to engage in treatment decision-making and subsequent therapy. By contrast, patients with low self-efficacy may gradually develop negative perceptions after repeated failures, reduce active communication, avoid treatment-related information, or even consider discontinuing treatment, ultimately aggravating learned helplessness. Previous infertility research demonstrated that self-efficacy is negatively correlated with negative emotions such as depression, suggesting it serves as a critical psychological resource for patients coping with infertility treatment stress.32 Therefore, clinical nursing focusing on self-efficacy should prioritize enhancing patients' coping capacity during treatment rather than simply requiring optimism or holding patients accountable for pregnancy outcomes. Specialist nurses can set nursing targets on treatment procedures that patients can participate in and complete, identify difficulties encountered during follow-up visits, and adjust support strategies promptly.

This study showed that higher perceived social support was correlated with lower learned helplessness in RIF patients, which agreed with the findings of Xie et al. among maintenance hemodialysis patients.33 Social support refers to emotional, informational and tangible assistance obtained from social connections including family, spouses, friends and medical staff, which buffers patients against treatment failure and long-term therapeutic stress.34 The treatment of RIF is repetitive and uncertain. Without stable social support, patients may fail to express and regulate negative emotions timely, and excessively attribute treatment failure to themselves.35 When patients receive understanding and help from family or significant others, their negative experiences can be acknowledged and practical difficulties resolved, reducing isolation and self-blame and preventing accumulation of helplessness. Medical staff should better understand RIF patients' treatment journeys and psychological needs, and actively assess their social support status. On this basis, small-scale peer communication activities can be organized in departments to provide opportunities for patients to express emotions and share coping strategies. For patients with insufficient support, nurses can guide family members to provide appropriate assistance according to patients' willingness and coordinate psychological resources to deliver sustained emotional and practical support, improve patients' perception of social support and reduce learned helplessness.

This study revealed that higher positive coping was associated with lower learned helplessness, while higher negative coping predicted greater learned helplessness among RIF patients, basically consistent with prior infertility-related studies.34 After repeated treatment failures, RIF patients may worry about subsequent therapy. Some patients avoid relevant information or passively wait for outcomes to temporarily relieve pain caused by failure. However, such strategies cannot resolve questions arising from treatment; instead, negative emotions keep accumulating and negative beliefs develop, eventually intensifying inner helplessness. Previous studies have shown that negative coping correlates with elevated depression and anxiety among infertile women, and avoidance coping predisposes individuals to psychological distress.36 Positive coping helps patients actively address therapeutic challenges,

relieve stress through active communication and appropriate help-seeking, and halt the progression of helplessness.37 Therefore, medical staff should provide individualized disease and treatment guidance based on patients' treatment histories and coping characteristics, help patients correctly recognize RIF and reduce fear of treatment outcomes. Patients with positive coping behaviors should be affirmed promptly and encouraged to sustain such strategies. For patients with avoidance or passive waiting tendencies, targeted guidance focusing on urgent problems should be offered to facilitate transition toward positive coping, enabling them to face subsequent treatment more appropriately.

Nevertheless, this study has several limitations. The samples were recruited from a single hospital, which may lead to selection bias. Future studies can expand the sample to patient populations from multiple regions. Meanwhile, this cross-sectional design can only reflect the level of learned helplessness at a specific time point. Longitudinal studies are warranted to dynamically explore the changing trajectory and formation mechanism of learned helplessness in RIF patients, so as to provide evidence for developing targeted interventions to reduce learned helplessness and improve reproductive health outcomes among RIF patients.

Conclusion

This study found that learned helplessness among patients with RIF was at a moderately high level. Age, educational level, household income, pregnancy attempt parity, self-efficacy, social support and coping style were its main influencing factors. Clinical nurses should pay close attention to older patients, patients with low educational attainment and low income, and those attempting their first pregnancy. Strengthening family-related support, guiding patients to adopt positive coping strategies and improving mental health education can reduce learned helplessness and promote their psychological well-being.

Abbreviations

RIF
Recurrent Implantation Failure
LHS
Learned Helplessness Scale
GSE
General Self-Efficacy Scale
PSSS
Perceived Social Support Scale
SCSQ
Simplified Coping Style Questionnaire
IVF-ET
In Vitro Fertilization and Embryo Transfer
STROBE
Strengthening the Reporting of Observational Studies in Epidemiology

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Chinese Yuan

Declarations

Disclosure

Ethics Approval and Consent to Participate

Consent for Publication

Written informed consent was obtained from the patients for publication of this study.

Data Sharing Statement

The original contributions presented in the study are included in the article, further

inquiries can be directed to the corresponding author.

Competing Interests

The authors declared that they had no competing interests in this work.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contribution

W.Y. and S.G. contributed to conceptualization, data curation, formal analysis, methodology, software, visualization, investigation, and writing the original draft and reviewing and editing the manuscript. S.C. contributed to conceptualization, methodology, supervision, and writing the original draft and reviewing and editing the manuscript. L.Z. contributed to supervision and validation. X.P. contributed to data curation, formal analysis, and software. C.X. contributed to data curation and investigation. All authors reviewed and approved the final manuscript.

Acknowledgement

We extend our sincere gratitude to the colleagues at Guangdong Maternal and Child Health Hospital for their valuable contributions and support throughout this study.

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