Investigation of the Current Status of Psychological Resilience in Patients with Hyperthyroidism

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Abstract

Hyperthyroidism is a common endocrine disease caused by excessive synthesis and secretion of thyroid hormones. Psychological resilience refers to the ability of human beings to cope mentally and physically under stress, which determines the resilience and psychological endurance of patients suffering from malignant ailments. Research shows that patients with high psychological resilience cope better. Their cooperation during treatment, improves recovery and improves prognosis. Conversely, patients with a low psychological resilience struggle coping. This may lead to depression, the aggravation of the illness due to refusal of further treatment and even serious adverse situations like self-harm and attacks on medical staff.

Keywords: hyperthyroidism; psychological resilience; status survey; cross-sectional

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study; influencing factors

Introduction

Objective

With the advancement of the bio-psycho-social medical model, the mental health management of patients with chronic diseases has attracted more and more attention. The primary objective of this study was to comprehensively assess the level of psychological resilience among patients with hyperthyroidism, identify key influencing factors and explore the underlying mechanisms affecting their coping processes. The was aim to assist healthcare providers in early detection of mental health issues, provide an empirical basis for developing targeted psychological interventions and ultimately facilitate the implementation of personalised and precise psychological care in clinical settings.

Methods

A cross-sectional study design was adopted. Through the convenience sampling survey method, 147 patients with hyperthyroidism who visited the endocrinology outpatient department of a tertiary general hospital in Pingdingshan City, Henan province from November 2024 to December 2024 were selected as research subjects. The demographic data of the patients were recorded. An independent sample t-test or one-way ANOVA was used to evaluate the current status of psychological resilience of patients with hyperthyroidism. A multiple linear regression analysis was used to determine the related factors affecting the psychological resilience of patients with hyperthyroidism.

Results

The overall resilience, toughness and strength scores of hyperthyroidism patients were 57.88%, 56.08% and 63.03%; and with an optimism score of 53.44%. The resilience scores of patients with hyperthyroidism were statistically significant in gender, age, marital status, per capita monthly household income and employment status ($P<0.05$). The study found that hyperthyroid patients who were male, older, married, employed, and had a higher monthly family income per capita tended to have higher levels of psychological resilience.

Clinical practitioners have always understood the significance of patients' psychological resilience levels for disease treatment and recovery. In recent years, issues related to the psychological resilience levels of patients with different diseases have been continuously explored and studied. Wei Ping's (2022) study which also analysed the contributing factors, found that the psychological resilience of infertile patients in Yunnan province was at a moderate level. Zhu Longyun's research probed into the risk factors affecting psychological resilience in patients with trigeminal neuralgia and showed that these factors often result in low resilience levels. The study conducted by Li Ming and others also indicated that the pain-related psychological

resilience of patients with temporomandibular joint disorders was at a moderate level. Li Xinrui and others pointed out in their research on patients with advanced cancer that monthly family income, disease stage and coping styles were the main determining factors of psychological resilience levels. Despite the growing body of research on psychological resilience in chronic conditions, a significant gap remains in clinical attention specifically directed towards patients with hyperthyroidism. Generally, the psychological resilience levels of hyperthyroidism patients are relatively low .This underscores a critical need for clinicians to move beyond solely managing thyroid hormone levels and necessitates the need to integrate standardised psychological screening into routine care. Such screening would allow for the early identification of patients with poor resilience, enabling timely interventions such as patient education, cognitive-behavioural therapy or counselling referrals. This study investigated the current situation of the psychological resilience level of patients with hyperthyroidism through a questionnaire survey, which further helped medical staff to better understand and find the problems existing in the mental health of patients and intervene in time to promote the recovery of their condition.

Objects and Methods

Subjects of the Study

A convenience sampling method was used to select 147 patients with hyperthyroidism who visited the endocrinology department of a tertiary general hospital in Pingdingshan City, Henan province from November 2024 to December 2024; as a research sample. The inclusion criteria for the sample were: (1) complete clinical data; (2) meet the diagnostic criteria for hyperthyroidism in the Guidelines for the Diagnosis and Treatment of Thyroid Diseases in China – Hyperthyroidism; (3) the diagnosis time of hyperthyroidism within six months; and (4) informed consent and voluntary participation in the study. The exclusion criteria were: (1) patients with other endocrine diseases; (2) pregnant and lactating patients; (3) people who had a huge stressful event within the last six months; (4) persons with pre-existing mental disorders or cognitive disabilities; and (5) patients with hypothyroidism who have changed from hyperthyroidism.

Research Tools

General Information Questionnaire

The questionnaire was designed by researchers to collect the demographic data from patients with hyperthyroidism. The contents included age (< 45 years old, ⩾ 45 years old), gender, the average monthly income per capita of the family (< 3 000 yuan, approximately <US$418; ⩾ 3 000 yuan, approximately ⩾US$418), employment status (employed, other), educational attainment (junior high school and below, senior high school, university and above), marital status (married, unmarried) and family history of hyperthyroidism (Yes, No).

Connor-Davidson Resilience Scale (CD-RISC)

The scale was developed by Connor and Davidson and translated and revised from Chinese by Ye Zengjie et al. It contains tenacity (13 items), strength (eight items), optimism (four items) and three dimensions, a total of which is 25 items. The Likert 5-scale scale was used on a scale of 0 (never) to 4 (almost always), with a maximum score of 100, with higher scores and better resilience. The level of mental resilience was judged according to the score rate (score rate = scale score/maximum score on scale) times 100%, <50% was low, 50% to75% was moderate and >75% was high. This scale is widely applied to patients both in China and abroad. The Cronbach's α coefficient of the Chinese version of the scale is 0.90 and the Cronbach's α coefficients of each dimension range from 0.81 to 0.83.

Survey Methodology

This study was a cross-sectional one, and the data were collected by means of a questionnaire survey. A total of 150 paper-based questionnaires were printed before the survey. During the survey period from November 2024 to December 2024, on-site explanations and question answering were provided to the research subjects in the endocrine outpatient department. A unified set of instructions was used for the questionnaire. After obtaining consent, paper-based questionnaires were distributed to the research subjects for filling in. The collected raw data were checked and entered into an Excel spreadsheet for storage. A total of 150 questionnaires were distributed during the study. After excluding invalid questionnaires with missing items and others, a total of 147 valid questionnaires were retrieved, with an effective rate of 98%.

Statistical Methods

An SPSS 27.0 data analysis software was used for input and statistically processing the information in Excel data tables. Normally distributed measures were performed using the independent-samples t-test or one-way ANOVA and the results were denoted by ('x±s). Counting data was statistically described by frequency and a composition ratio multivariate analysis was performed using multiple linear regression. The difference was statistically significant, with a difference of $P<0.05$.

Outcome

Demographic Information of Patients With Hyperthyroidism

Among the 147 patients with hyperthyroidism, there were 116 female patients (78.9%) and 31 male patients (21.1%). The age range was from 17 to 65 years, with an average age of (35.44 ±11.56) years. The majority of patients, accounting for 69.4%, were under 45 years. There were 22 patients with junior high school education and below, accounting for 15.0% and 64 patients with university and above, accounting for 43.5%. Meanwhile, there were 99 unmarried patients, accounting for 67.3%, which was much

higher than the 48 married patients, accounting for 32.7%. The percentage of patients with hyperthyroidism whose family's average monthly income per capita was below 3 000 yuan (approximately below US$418) was 58.5%. Among the patients with hyperthyroidism, 69 were employed, accounting for 46.9% and 78 were in other employment statuses, accounting for 53.1%. The proportion of patients without a family history of hyperthyroidism was relatively high at 56.5%.

Analysis of the Current Situation of Psychological Resilience in Patients With Hyperthyroidism

In the revised version of the resilience scale, the overall level of resilience and tenacity, strength and optimism of patients with hyperthyroidism were at a moderate level. The specific resilience scores are shown in table 1.

Table 1: Analysis of the current status of psychological resilience in patients with hyperthyroidism (n = 147).

Dimension	Scoring range (points)	Average score ('x±s, points)	Scoring rate (%)
Toughness	0 –50	29.16 ±6.77	56.08
Strength	7–32	20.17 ±4.16	63.03
Optimism	3–14	8.55 ±2.42	53.44
General resilience	10–96	57.88 ±10.82	57.88

Resilience Scores in Patients With Hyperthyroidism With Different Characteristics

The total resilience score of patients with hyperthyroidism varied by gender, age, marital status, per capita monthly family income and employment status and the difference was statistically significant ($P<0.05$). There was no significant difference in the resilience scores of hyperthyroidism patients under different education levels ($P>0.05$). The remaining information is shown in table 2.

Table 2: Resilience scores of patients with hyperthyroidism with different characteristics (n = 147)

Project	Number	Resilience score ('x±s, points)	F/t	P
Gender			3.067	0.003
Male	31	63.03 ± 12.22		
Female	116	56.51 ±10.03		
Age			-2.619	0.011
< 45 years	102	56.18 ±9.35		
≥ 45 years	45	61.76 ±12.87		
Education			0.379	0.685
Junior high school and below	22	57.64 ± 7.99		
High school	61	58.79 ±11.62		
University and above	64	57.11 ±10.96		
Marital status			2.577	0.011
Married	48	61.13±10.27		
Unmarried	99	56.31 ±10.77		
Monthly income per capita			-2.472	0.015
< 3 000 yuan	86	56.06 ±11.19		
≥ 3 000 yuan	61	60.46 ±9.79		
Employment status			2.374	0.019
Employed	69	60.10 ±11.17		
Other	78	55.92 ±10.18		
Family history of hyperthyroidism			-1.398	0.164
Positive	64	56.47 ±11.33		

Negative	83	58.98 ±10.35

Factors Influencing Resilience in Patients with Hyperthyroidism

This study used a multiple linear regression model to explore the effects of different factors on the resilience scores of patients with hyperthyroidism. The variables with statistically significant differences in table 2, such as gender, age, marital status, per capita monthly household income and employment status, were set as independent variables (see table 3 for the assignment method). The total score of resilience was set as the dependent variable for regression analysis. The results showed that the total score of resilience in hyperthyroidism patients who were male, older, married, with higher per capita monthly family income and employed patients had higher psychological resilience, accounting for 21.0% of the total variation and the specific results are shown in table 4.

Table 3: Methods for assigning values to independent variables

Argument	Assignment
Gender	Male = 0, female = 1
Age/years	< 45 years = 0, ≥ 45 years = 1
Marital status	Married = 1, unmarried = 0
Household per capita monthly income per yuan	<3000 = 0, ≥3000 = 1
Employment status	Other = 0, incumbent = 1

Table 4: Multiple linear regression analysis of influencing factors of resilience in patients with hyperthyroidism (n = 147).

Argument	Regression coefficients	Standard error	Standard regression coefficients	T	P
Constant terms	55.023	2.235	–	24.621	<0.001
Gender	-5.749	1.957	-0.218	-2.938	0.004
Age	5.104	1.755	0.218	2.908	0.004
Marital status	4.531	1.762	0.197	2.572	0.011
Monthly income per capita	5.306	1.645	0.242	3.225	0.002
Employment status	4.589	1.597	0.212	2.873	0.005

Note: R = 0.487, R2 = 0.237, adjusted R2 = 0.210, F = 8.750, P<0.001

Analysis and Discussion

Analysis of the Current Situation of Psychological Resilience in Patients With Hyperthyroidism

The results of the study, as shown in table 1, the overall CD-RISC score for patients with hyperthyroidism was 57.88 ±10.82, with a score rate of 57.88%, indicating a medium level of psychological resilience. The score rates for the three dimensions were as follows: tenacity at 56.08%, strength at 63.03% and optimism at 53.44%. All dimensions also demonstrated a medium level. This is consistent with the results of Yu Yinli et al, which shows that the overall level of psychological resilience of hyperthyroidism patients is relatively low, suggesting that medical staff should also pay attention to the mental health of hyperthyroid patients while treating the disease and provide psychological comfort to hyperthyroid patients in a timely manner.

The reason for this analysis was that the survey samples were all outpatient clinics, patients who have fewer opportunities to communicate with medical staff; and due to the tension between nurses and patients in recent years, the negative emotions of patients cannot be relived. The overall monthly household income level is low, the number of patients in other employment statuses such as unemployed or resignation is high and the economic pressure caused by the disease is greater. In addition, female patients accounted for a high proportion of the study sample. Under current social conditions,

women face increasing life and mental stress. However, they often lack avenues to release these negative emotions and psychological pressures. This leads to relatively lower psychological resilience. Furthermore, health education provided by hospital medical staff remains insufficient.

Analysis of Influencing Factors of Psychological Resilience in Patients With Hyperthyroidism

According to the information in table 2, the level of resilience of male over 45 years old, married and patients with a per capita monthly income of more than 3 000 yuan was significantly higher than that of females under 45 years old, unmarried, with a per capita monthly income of less than 3 000 yuan ($P<0.05$). Multiple linear regression analysis showed that gender, age, marital status, per capita monthly income and employment status had an impact on the resilience level of hyperthyroidism patients ($P<0.05$).

Gender

This study revealed a statistically significant gender difference in psychological resilience, with female patients scoring lower (56.51 ± 10.03) than males (63.03 ± 12.22). This discrepancy may be attributed to gendered patterns in emotional processing and social coping strategies. Previous studies suggest that women often demonstrate higher emotional sensitivity and interpersonal awareness, which, while fostering empathy and caregiving behaviours, may also predispose them to internalise distress and hesitate to seek emotional support due to sociocultural expectations. Consequently, this tendency towards emotional suppression, combined with greater exposure and reactivity to interpersonal stressors, may contribute to increased psychological burden and relatively lower resilience scores compared to male counterparts. In addition, as opposed to men, women have an introverted temperament and tend to lack social support and humanistic care under pressure, while men have stronger psychological tolerance, greater opportunities to contact the outside world and have more ways to vent emotions in the face of diseases, as a result the level of psychological resilience of male patients is higher than that of female patients.

Age

Combined with the information in table 2, the CD-RISC score of hyperthyroidism patients under the age of 45 was (56.18 ± 9.35), which was significantly lower than that of patients aged 45 and above (61.76 ± 12.87). The multivariate analysis shown in table 4 further confirmed that older age was positively associated with higher psychological resilience scores among hyperthyroidism patients. This finding is consistent with the study by Weng Yanrong et al. (2023), who argued that older patients tend to possess richer life experiences and more stable coping strategies, thereby exhibiting greater resilience in the face of illness. The reasons for the lower psychological resilience observed in patients under 45 years are as follows: in the context of rapid societal development, many younger patients may still be in early or unstable stages of their

social and professional lives. Patients under the age of 45 may exhibit lower resilience due to less consolidated coping skills typically developed through life experience. This cohort is also frequently exposed to multiple concurrent stressors, such as establishing careers and forming families, which can deplete psychological resources and amplify the impact of illness-related stress. Conversely, patients over the age of 45 have more life experience, which gradually increases their ability to cope with stress, have a higher stable mentality in dealing with diseases and a higher level of psychological stress resistance.

Marital Status

Unmarried patients were more likely to develop the disease than married patients, but their resilience scores were lower than those of married patients. Specific analysis indicates that the spousal support is an important factor for the patient when the patient is affected by illness, negative emotions and psychological pressure because the spouse becomes the source of psychological comfort and an emotional confidant. This emotional dependence not only helps to alleviate the psychological burden; it significantly increases patients' confidence in the treatment of hyperthyroidism. Conversely, unmarried patients often lack effective emotional catharsis when faced with difficult situations, which not only poses a threat to their mental health, but may also lead to relatively low psychological resilience, as shown by Jiawei Fu's (2023) study of the problems faced by unmarried women in the workplace.

Monthly Income Per Capita

It can be inferred from table 2 that patients with hyperthyroidism who have a per capita family income of less than 3 000 yuan per month have a poor level of psychological resilience. As shown in table 4, as the per capita monthly income of the family gradually increases, the overall psychological resilience score of patients with hyperthyroidism also gradually rises. The per capita monthly income of the family is positively correlated with the overall psychological resilience level of hyperthyroidism patients, which is consistent with the research results of Wen Li et al. In patients with low family income levels, patients need to bear the cost of long-term drug therapy and regular thyroid function checks, and the cost of treatment and examination can increase the financial burden on the family, which can lead to increased psychological stress and stigma, which in turn reduces the level of resilience. Lower household incomes lead to a corresponding increase in social and mental stress, which also negatively affects the level of resilience.

Employment Status

The number of hyperthyroidism patients who are unemployed or have left their jobs and are in other employment statuses is higher than that of hyperthyroidism patients who are employed, but their psychological resilience levels are much lower than those of employed hyperthyroidism patients. This finding is consistent with the research results of Yang Yang, Ao Qixue, Shen et al. This higher resilience is attributable to the fact

that employed hyperthyroidism patients often have a stable source of income, which reduces financial strain on their families. As a result, they may experience less psychological pressure and guilt compared to those who are unemployed or have left their jobs, thereby contributing to a higher level of psychological resilience.

Conclusion

Hyperthyroidism patients in this study demonstrated a moderate level of psychological resilience, influenced by factors including gender, age, marital status, income and employment status; accordingly, clinicians should integrate psychological support into care plans, particularly for patients with these risk factors. However, this study was limited by the lack of a power analysis for sample size determination and potential selection bias from convenience sampling, and future studies should therefore employ stratified sampling and perform a priori power analyses to improve generalisability and robustness.

The observed moderate level of psychological resilience among hyperthyroidism patients underscores the need for integrated psychosocial care in clinical management, particularly for subgroups with lower resilience identified in this study, such as younger, unmarried, or unemployed individuals. Based on these findings, it is recommended that clinicians integrate structured psychological support into routine care plans for hyperthyroidism patients, with particular emphasis on high-risk subgroups such as women, younger adults, unmarried individuals, and those with lower socioeconomic status. Furthermore, future research should incorporate longitudinal designs to track resilience over time, qualitative studies to explore lived experiences and intervention trials aimed at enhancing psychological support. Additional investigation into biological correlates and cross-cultural comparisons would also deepen the understanding of resilience mechanisms in this population, ultimately contributing to more personalised and effective psycho-clinical management.

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