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Influence of psychological need satisfaction on self-neglect among patients with oral mucositis after chemoradiotherapy for head and neck cancer: The mediating roles of family resilience and psychological resilience

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Abstract: Objective: This study aimed to explore the relationships among family resilience, psychological resilience, psychological need satisfaction, and self-neglect, with a particular focus on analyzing the mediating roles of family resilience and psychological resilience between basic psychological need satisfaction and self-neglect. The purpose was to provide a theoretical basis and practical guidance for improving the psychological state of patients with oral mucositis (OM) after chemoradiotherapy (CRT) for head and neck cancer (HNC). **Methods:** This retrospective study selected OM-patients post-CRT for HNC from Affiliated Hospital of Jiangnan University between January 2022 and December 2024 as the research subjects. A total of 312 patients were surveyed using a general information questionnaire, the Basic Psychological Needs Scale (BPNS), the Scale of the Elderly Self-Neglect (SESN), the Family Resilience Questionnaire (FRQ), and the 10-item Connor-Davidson Resilience Scale (CD-RISC-10). Structural equation modeling and the Bootstrap method were used to test the mediating effects of family resilience and psychological resilience between psychological need satisfaction and self-neglect in these patients. **Results:** The scores of patients on the BPNS, SESN, FRQ, and CD-RISC-10 were 5.35 ± 1.05 , 8.16 ± 5.607 , 78.56 ± 12.50 , and 23.45 ± 8.03 , respectively. Statistically significant differences were found in BPNS, FRQ, and CD-RISC-10 scores based on residence, education, living situation, economic pressure, metastasis status, and complications ($P < 0.05$). SESN scores also showed significant differences across age, residence, education, living situation, economic pressure, metastasis, and complications ($P < 0.05$). Psychological need satisfaction negatively correlated with self-neglect ($r = -0.462$, $P < 0.01$) and positively with family and psychological resilience ($r = 0.546$ and 0.497 , both $P < 0.01$). A structural equation model indicated good fit indices, revealing that basic psychological need satisfaction negatively impacted self-neglect, with family and psychological resilience serving as significant mediators. **Conclusion:** The satisfaction of basic psychological needs in OM-patients post-CRT for HNC can directly or indirectly affect their self-neglect through family resilience and psychological resilience. In daily nursing care, it is possible to avoid self-neglect in patients by meeting their basic psychological needs and enhancing their family resilience and psychological resilience.

Keywords: After chemoradiotherapy for head and neck cancer; oral mucositis; psychological need satisfaction; self-neglect; family resilience; psychological resilience; mediating role

1. Introduction

Head and neck cancer (HNC) is a collective term for malignant tumors occurring in the oral and maxillofacial region, pharynx, larynx, nasal cavity, and paranasal sinuses. It ranks sixth in the incidence of common malignant tumors worldwide, with more than 90% being head and neck squamous cell carcinoma (HNSCC) [1,2]. The

anatomical structure of HNC is extremely complex. It is composed of many vital organs, such as bones, muscles, nerves, and blood vessels, which are intertwined with each other. Once cancer occurs, treatment is difficult, and the possibility of radical resection is low [3–5]. Radiotherapy is one of the main treatment methods for head and neck tumors at present. However, it also has adverse reactions during the treatment process. To improve the treatment effect, a more safe and effective comprehensive treatment method of concurrent chemoradiotherapy is usually adopted clinically [6]. Patients receiving concurrent chemoradiotherapy usually experience oral side effects, including oral mucositis, xerostomia, dysphagia, radiation caries, trigeminal neuralgia, tissue damage, and osteoradionecrosis [7]. Among these side effects, oral mucositis (OM) has the highest incidence [8,9]. OM is an inflammatory disease. It can cause symptoms in the oral cavity and the entire digestive tract by affecting the condition of the submucosal connective tissue [10]. The risk factors for developing OM include the dosage and duration of radiotherapy and chemotherapy, the patient's age, oral hygiene status, nutritional status, immune system function, etc. In addition, poor lifestyle habits such as smoking and alcohol consumption can also increase the risk of patients developing OM. Research shows [11] that during the process of simple radiotherapy, the incidence of OM reaches 90%. If chemotherapy is combined with radiotherapy, the incidence of OM can even reach 100%. HNC encompasses various types of cancers, some of which are extremely rare. Its growth location is special, involving important organs in the head and face, so it may cause negative emotions in patients [12]. Research shows [13] that compared with other cancer patients and the general population, the suicide rate of HNC patients is significantly higher. Psychological problems such as anxiety and depression can have an adverse impact on patients' physical health and further exacerbate OM [14]. The severity and pain level of OM can affect patients' diet and language abilities. Severe OM may even lead to complications such as infections and bleeding, posing a further threat to patients' physical and mental health [15].

Self-neglect is defined as a chronic pattern where individuals fail to attend to their basic needs or health status, leading to impairments in physical, psychological, or social functions self-neglect is defined as a chronic pattern where individuals fail to attend to their basic needs or health status, leading to impairments in physical, psychological, or social functions [16,17]. This behavior is particularly prevalent among the elderly, those with mental illnesses, and individuals in high-pressure, isolated settings. In the context of patient care, self-neglect can have significant implications, such as increasing the risk of emergency room visits [18] and overall decline in the quality of life [19,20].

Research indicates that family resilience is a crucial factor influencing self-neglect [21]. Psychological resilience, which refers to an individual's capacity to uphold mental health under stress Rutter [22,23], is also involved. Notably, family resilience serves as a protective factor for psychological resilience [24]. Moreover, the satisfaction of basic psychological needs has been identified as an important determinant of family resilience [25,26].

Considering these potential interconnections, this study hypothesizes that family resilience and psychological resilience mediate the impact of basic psychological need satisfaction on self-neglect. Specifically, the study focuses on patients with oral

mucositis (OM) following chemoradiotherapy (CRT) for head and neck cancer (HNC). By constructing and analyzing a structural equation model among family resilience, basic psychological need satisfaction, psychological resilience, and self-neglect, the findings aim to offer theoretical support for medical staff. This will enable them to design targeted interventions to effectively reduce self-neglect in patients and enhance their quality of life.

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2. Methods

2.1. Materials and methods

In this study, patients with oral mucositis (OM) after chemoradiotherapy (CRT) for head and neck cancer (HNC) from Affiliated Hospital of Jiangnan University between January 2022 and December 2024 were retrospectively selected as the research subjects.

Inclusion Criteria: (I) Patients pathologically diagnosed with head and neck malignancies such as oral cancer, nasopharyngeal cancer, lip cancer, tongue cancer, laryngeal cancer, and thyroid cancer. (II) Patients who had completed radiotherapy and/or chemotherapy courses and developed OM after treatment. Patients aged 60 years or older. Patients with clear consciousness who could cooperate with the questionnaire survey. **Exclusion Criteria:** (I) Patients with other types of cancers. (II) Patients with severe Alzheimer's disease, consciousness disorders, or mental illnesses. (III) Patients with missing research information of $\geq 10\%$.

The Kline sample estimation method suggests that for a study on variable influencing factors, the sample size should be at least 5–10 times the number of variables [27]. In this study, there are 9 demographic characteristics, 4 items of clinical data, 3 items in the basic psychological needs scale, 5 items in the elderly self-neglect scale, 4 items in the family resilience questionnaire, and 1 item in the brief

psychological resilience scale, totaling 26 variables. Thus, the required sample size is 130–260 cases. Considering a 10% information loss and comprehensively evaluating the sample size requirements for the mediating effect analysis in the structural equation model, it was determined that a sample size of more than 330 cases is more robust.

2.2. Questionnaire

General Information Questionnaire: This questionnaire was designed by the researchers themselves through a systematic review of the literature and in combination with the purpose and content of this study. It mainly includes general demographic characteristics (such as age, gender, living situation, educational level, and economic status) and clinical disease-related information (such as disease location, treatment method, metastasis status, and related complications).

Basic Psychological Needs Scale (BPNS): The BPNS was developed by Sheldon and Niemiec and revised by Du et al [28]. It consists of 3 dimensions and 9 items, which measure an individual's needs for autonomy, competence, and relatedness respectively. Each item is scored on a 7-point Likert scale, and some items are reverse-scored. The scale score ranges from 0 to 15 points. The higher the total score, the higher the degree of need satisfaction. In this study, the total Cronbach's α coefficient of the scale was 0.913.

Scale of the Elderly Self-Neglect (SESN): The SESN was developed by Zhao et al. [19]. through the Delphi expert consultation method based on the Chinese national conditions. The scale contains 5 dimensions and 14 items, which measure patients' medical care and health preservation, environmental hygiene and personal hygiene, mental health, safety, and social communication. Each item is scored on a 4-point Likert scale. The scale score ranges from 0 to 42 points, and the higher the total score, the higher the degree of self-neglect. In this study, the total Cronbach's α coefficient of the scale was 0.783.

Family Resilience Questionnaire (FRQ) [29]: The FRQ consists of 4 dimensions: perseverance, harmony, openness, and supportiveness. Each dimension contains 5 items. Each item is scored on a 5-point Likert scale. The scale score ranges from 20 to 100 points. The higher the total score, the higher the level of family resilience. In this study, the total Cronbach's α coefficient of the scale was 0.933.

10-item Connor-Davidson Resilience Scale (CD-RISC-10) [30]: The CD-RISC-10 can rapidly assess patients' psychological resilience. This scale contains 10 items, and each item is rated on a 5-point Likert scale. The total score ranges from 0 to 40 points. The higher the total score, the higher the level of patients' psychological resilience. In this study, the total Cronbach's α coefficient of the scale was 0.905.

2.3. Data collection

A database was established for all enrolled patients. The disease-related information was filled in by the researchers after reviewing the medical records. The questionnaires were to be filled out by the patients themselves. For outpatients coming for follow-up, the questionnaires were administered after they completed the face-to-face consultation and relevant examinations. For inpatients, the questionnaires were given after they finished the day's treatment and examinations. The questionnaires

were collected immediately after completion, and the filling quality was checked right away. Each returned questionnaire was screened one by one. For items that were left blank, follow-up inquiries were made to obtain the correct information. In the data collection phase of this study, a total of 330 questionnaires were retrieved. To ensure the quality of the data, all the questionnaires were strictly screened. Eventually, 312 valid questionnaires were included in the analysis, while 18 questionnaires were excluded. The specific reasons for exclusion are as follows: Five questionnaires were excluded because of the severe lack of key information, with a large number of required items left blank, which made it impossible to obtain complete data and provide effective support for the study. Eight questionnaires were excluded as there was an obvious pattern in the answers. For example, the same option was chosen for more than five consecutive questions, suggesting random answering and an inability to truly reflect the respondents' attitudes. Additionally, five questionnaires were excluded due to serious logical contradictions. For instance, in one question, a positive attitude towards something was expressed, but in a related question, an entirely opposite answer was given, which greatly affected the credibility of the data. Two researchers independently entered the data into Excel until the databases were consistent.

2.4. Statistical analysis

In this study, SPSS 28.0 statistical software and AMOS 24.0 software were used to analyze the entered data. The two-sided test level was set at $P < 0.05$, and a difference was considered statistically significant.

Descriptive Analysis: General descriptive analysis was performed on the general information and the scores of each scale. For measurement data, a normality test was first conducted. Data conforming to a normal distribution were described using the mean $\pm$ standard deviation, while non-normally distributed data were described using the median and interquartile range. Count data were expressed as rates or composition ratios.

Univariate Analysis: For data with a normal distribution, *t*-tests and analysis of variance were used to compare the differences in self-neglect among different characteristic populations. For non - normal data, non-parametric tests were applied.

Correlation Analysis: Pearson correlation analysis was used to examine the correlations among the four variables of family resilience, psychological resilience, psychological need satisfaction, and self-neglect, as well as among their respective dimensions.

Construction of Structural Equation Model and Mediation Effect Analysis: AMOS 24.0 was used to conduct the mediation effect model analysis. The Bootstrap method was adopted to explore whether the mediation effects of family resilience and psychological resilience were significant. If the 95% confidence interval did not contain 0, the mediation effect was considered significant.

4. Results

4.1. Comparison of general patient information

A total of 312 patients were included in this study. Among them, 209 were male (66.99%) and 103 were female (33.01%). In terms of age, 32 patients were 60–64 years old (10.26%), 56 were 65–69 years old (17.95%), and 56 were 70 years old or above (17.95%). Regarding residence, 227 patients lived in urban areas (72.76%) and 85 lived in rural areas (27.24%). In terms of educational level, 93 patients had a primary school education or below (29.81%), and 219 had a junior high school education or above (70.19%). In terms of living situation, 57 patients lived alone (18.27%), and 255 lived with others (81.73%). Regarding economic pressure, 79 patients had economic pressure (25.32%), and 233 had no economic pressure (74.68%). In terms of disease location, 238 patients had thyroid or parathyroid cancer (76.28%), 23 had oral cancer (7.37%), 20 had pharyngeal cancer (6.41%), 16 had laryngeal cancer (5.13%), 9 had salivary gland cancer (2.88%), and 6 had nasal cavity or paranasal sinus cancer (1.92%). In terms of treatment methods, 265 patients underwent surgery (84.94%), 25 underwent surgery combined with other treatments (8.01%), and 22 underwent other treatments (7.05%). Regarding metastasis, 31 patients had metastasis (9.94%), and 281 had no metastasis (90.06%). Regarding complications, 78 patients had complications (25.00%), and 234 had no complications (75.00%). See **Table 1** for details.

Table 1. General information of OM-patients post-CRT for HNC ($n = 312$).

Item		<i>n</i>	Constituent ratio(%)
Gender	Male	209	66.99
	Female	103	33.01
Age	60~	144	46.15
	65~	112	35.90
	70~	56	17.95
Residence	Rural area	85	27.24
	Urban area	227	72.76
Educational Level	Primary school and below	93	29.81
	Junior high school and above	219	70.19
Living Alone	Yes	57	18.27
	No	255	81.73
Economic Pressure	Yes	79	25.32
	No	233	74.68
Disease Location	Thyroid and parathyroid cancer	238	76.28
	Oral cancer (lips, tongue, gingival mucosa, palate)	23	7.37
	Pharyngeal cancer (nasopharynx, oropharynx, and hypopharynx)	20	6.41
	Laryngeal cancer	16	5.13

Table 1. (Continued).

Item		<i>n</i>	Constituent ratio(%)
Treatment Method	Salivary gland cancer (parotid gland, submandibular gland, sublingual gland, and minor salivary glands)	9	2.88
	Nasal cavity and paranasal sinus cancer	6	1.92
	Surgery	265	84.94
	Surgery + radiotherapy/chemotherapy/chemoradiotherapy/targeted therapy/immunotherapy/others	25	8.01
	Radiotherapy/chemotherapy/chemoradiotherapy/targeted therapy/immunotherapy/others	22	7.05
Metastasis	Yes	31	9.94
	No	281	90.06
Complications	Yes	78	25.00
	No	234	75.00

4.2. Scores of BPNS, SESN, FRQ, and CD-RISC-10 in OM-patients post-CRT for HNC

The scores of BPNS, SESN, FRQ, and CD - RISC - 10 in OM-patients post-CRT for HNC were 5.35 ± 1.05 , 8.16 ± 5.607 , 8.56 ± 12.50 , and 23.45 ± 8.03 points respectively. here were statistically significant differences in the scores of BPNS, FRQ, and CD-RISC-10 among patients with different residence places, educational levels, living situations, economic pressures, metastasis statuses, and complication conditions ($P < 0.05$).

There were also statistically significant differences in the SESN scores among patients with different age ranges, residence places, educational levels, living situations, economic pressures, metastasis statuses, and complication conditions ($P < 0.05$). See **Table 2** for details.

Table 2. BPNS, SESN, FRQ, CD-RISC-10 scores in of OM-patients post-CRT for HNC ($n = 312$, $\bar{x} \pm s$).

Item		BPNS	SESN	FRQ	CD-RISC-10
Gender	Male	5.32 ± 1.33	8.20 ± 5.60	78.33 ± 13.32	23.11 ± 6.98
	Female	5.41 ± 1.45	8.08 ± 5.16	79.03 ± 9.78	24.14 ± 7.71
Age	60~	5.29 ± 1.43	7.12 ± 5.85	79.43 ± 10.89	22.49 ± 9
	65~	5.42 ± 1.32	8.64 ± 5.85	77.73 ± 13.73	24.37 ± 7.66
	70~	5.36 ± 1.44	$9.87 \pm 5.08^*$	77.98 ± 12	24.07 ± 7.34
Residence	Rural area	5.13 ± 1.39	9.84 ± 5.28	74.67 ± 13.43	21.16 ± 7.75
	Urban area	$5.43 \pm 0.89^*$	$7.53 \pm 5.53^*$	$80.02 \pm 9.76^*$	$24.31 \pm 7.46^*$
Educational level	Primary school and below	5.17 ± 0.87	9.87 ± 5.62	76.59 ± 12.63	22.01 ± 8.32
	Junior high school and above	$5.43 \pm 1.57^*$	$7.43 \pm 5.95^*$	$79.4 \pm 10.3^*$	$24.06 \pm 7.17^*$
Living alone	Yes	5.05 ± 1.01	10.14 ± 4.30	75.49 ± 12.33	20.97 ± 7.72

Table 2. (Continued).

Item		BPNS	SESN	FRQ	CD-RISC-10
Economic pressure	No	5.42 ± 1.22 *	7.72 ± 5.96*	79.25 ± 14.14*	24 ± 7.87*
	Yes	5.09 ± 0.97	10.43 ± 5.87	75.33 ± 10.53	19.85 ± 6.87
Disease location	No	5.44 ± 0.86*	7.39 ± 4.51*	79.66 ± 9.86*	24.67 ± 7.18*
	Thyroid and parathyroid cancer	5.43 ± 1.20	8.10 ± 5.44	79.37 ± 11.98	23.69 ± 7.25
	Oral cancer (lips, tongue, gingival mucosa, palate)	5.39 ± 1.17	8.34 ± 5.98	77.56 ± 13.84	22.97 ± 9.02
	Pharyngeal cancer (nasopharynx, oropharynx, and hypopharynx)	5.24 ± 0.90	8.97 ± 5.76	80.74 ± 14.11	23.84 ± 8.42
	Laryngeal cancer	5.22 ± 0.98	9.10 ± 5.94	78.67 ± 14.02	24.19 ± 8.73
	Salivary gland cancer (parotid gland, submandibular gland, sublingual gland, and minor salivary glands)	5.34 ± 1.23	8.33 ± 5.26	80.11 ± 11.33	23.7 ± 8.49
	Nasal cavity and paranasal sinus cancer	5.33 ± 1.09	8.50 ± 5.80	78.2 ± 11.94	23.47 ± 7.17
Treatment method	Surgery	5.36 ± 1.14	8.20 ± 4.40	78.51 ± 12.44	23.29 ± 7.34
	Surgery + radiotherapy/chemotherapy/chemoradiotherapy/targeted therapy/immunotherapy/others	5.29 ± 0.94	7.87 ± 5.06	77.25 ± 11.36	24.62 ± 7.74
	Radiotherapy/chemotherapy/chemoradiotherapy/targeted therapy/immunotherapy/others	5.30 ± 0.92	7.99 ± 4.55	80.24 ± 12.17	24.12 ± 8.47
Metastasis	Yes	5.10 ± 1.30	9.79 ± 5.93	75.92 ± 13.86	20.97 ± 8.97
	No	5.38 ± 1.33 *	7.98 ± 5.97*	78.85 ± 13.34*	23.72 ± 8.75*
Complications	Yes	5.20 ± 1.04	10.07 ± 4.05	76.31 ± 11.93	20.97 ± 7.8
	No	5.40 ± 0.97*	7.52 ± 5.83*	79.31 ± 12.6*	24.28 ± 7.93*

* $P < 0.05$; BPNS: Basic Psychological need satisfaction; ESN: Elderly self-neglect; FR: Family resilience; PR: Psychological resilience.

4.3. Correlation analysis of BPNS, SESN, FRQ, and CD-RISC-10

The results of Pearson correlation analysis showed that: There was a significant negative correlation between psychological need satisfaction and self-neglect ($r = -0.462$, $P < 0.01$). There was a significant positive correlation between psychological need satisfaction and family resilience ($r = 0.546$, $P < 0.01$), and also a significant positive correlation between psychological need satisfaction and psychological resilience ($r = 0.497$, $P < 0.01$). There was a significant negative correlation between self-neglect and family resilience ($r = -0.457$, $P < 0.01$), and a significant negative correlation between self-neglect and psychological resilience ($r = -0.506$, $P < 0.01$). There was a significant positive correlation between family resilience and psychological resilience ($r = 0.551$, $P < 0.01$). See **Table 3** for details.

Table 3. Correlation analysis between major variables ($n = 312$).

Item	BPNS	SESN	FRQ	CD-RISC-10
BPNS	1.000			
SESN	-0.462**	1.000		
FRQ	0.546**	-0.457**	1.000	
CD-RISC-10	0.497**	-0.506**	0.551**	1.000

** $P < 0.01$ (two-tailed); BPNS: Basic Psychological need satisfaction; ESN: Elderly self-neglect; FR: Family resilience; PR: Psychological resilience.

4.4. Mediation effect analysis

In this study, a structural equation model was established with basic psychological need satisfaction as the independent variable, self-neglect as the dependent variable, and family resilience and psychological resilience as mediating variables. The fitting indices of the test results of the mediation effect model are as follows:

$\chi^2/df = 2.233 (<3)$, RMSEA = 0.054 (<0.08), GFI = 0.974 (>0.90), AGFI = 0.956 (>0.90), TLI = 0.980 (>0.90), CFI = 0.982 (>0.90), NFI = 0.962 (>0.90). See **Figure 1** and **Table 4**.

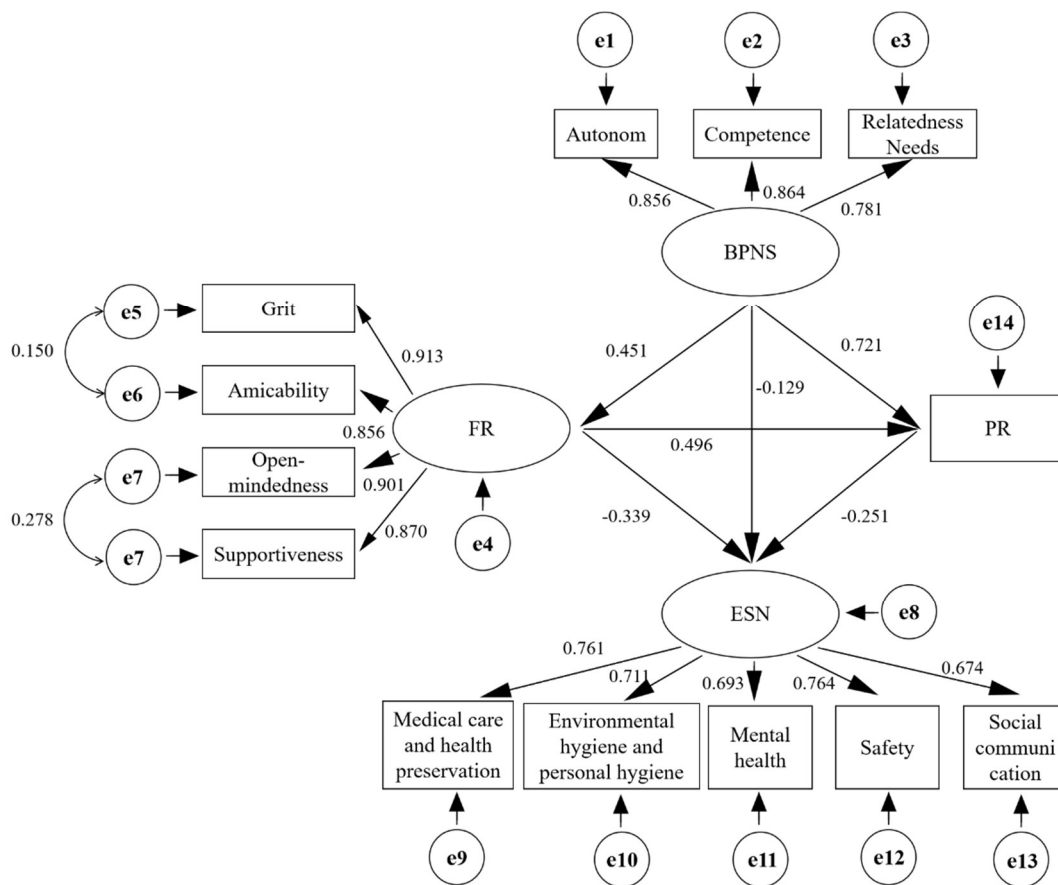


Figure 1. Mediation effect model.

e: Residual term; BPNS: Basic psychological need satisfaction; ESN: Elderly self-neglect; FR: Family resilience; PR: Psychological resilience.

Table 4. Fit indices of the mediating effect model.

Index	χ^2/df	RMSEA	GFI	AGFI	TLI	CFI	NFI
Fitting criteria	<3.00	<0.08	>0.90	>0.90	>0.90	>0.90	>0.90
Final fitting criteria	2.233	0.054	0.974	0.956	0.980	0.982	0.962

χ^2/df : ratio of chi-square to degrees of freedom; RMSEA: root mean square error of approximation; GFI: goodness-of-fit index; AGFI: adjusted goodness-of-fit index; NFI: normed fit index; TLI: Tucker-Lewis index; CFI: comparative fit index.

Testing the Mediation Roles of Family Resilience and Psychological Resilience in the Relationship between Basic Psychological Need Satisfaction and Self - neglect among OM-patients post-CRT for HNC Using the Bootstrap Method. The total effect

of basic psychological need satisfaction on self-neglect was -0.519 , and the direct effect of basic psychological need satisfaction on self-neglect was -0.129 , with an effect size of 25%.

The results showed that family resilience played a mediating role between basic psychological need satisfaction and self-neglect with a mediating effect of -0.153 and an effect size of 29%. Psychological resilience played a mediating role between basic psychological need satisfaction and self-neglect with a mediating effect of -0.181 and an effect size of 35%. Family resilience and psychological resilience together played a mediating role between basic psychological need satisfaction and self-neglect with a mediating effect of -0.056 and an effect size of 11%.

The confidence intervals of the above-mentioned mediating effects did not contain 0, indicating that the mediating roles were established. See **Table 5**.

Table 5. Analysis of mediation effect.

Effect	Path	β	Lower limit of 95% CI	Upper limit of 95% CI	<i>P</i>	Effect size
Total effect	BPNS $\rightarrow$ ESN	-0.519	-0.442	-0.278	0.002	100
Direct effect	BPNS $\rightarrow$ ESN	-0.129	-0.219	-0.025	0.012	25
Indirect effect	BPNS $\rightarrow$ FR $\rightarrow$ ESN	-0.153	-0.269	-0.097	0.007	29
	BPNS $\rightarrow$ PR $\rightarrow$ ESN	-0.181	-0.294	-0.132	0.008	35
	BPNS $\rightarrow$ FR $\rightarrow$ PR $\rightarrow$ ESN	-0.056	-0.138	-0.037	0.007	11

BPNS: Basic psychological need satisfaction; ESN: Elderly self-neglect; FR: Family resilience; PR: Psychological resilience.

5. Discussion

HNC is regarded as the cancer that “most easily triggers emotional trauma” [31]. Factors such as the patient’s age, gender, economic status, educational level, and the presence or absence of family members can, to some extent, influence an individual’s emotional regulation, social, and cognitive abilities. These abilities are crucial for ensuring a good prognosis for patients. This study focused on the psychological status of elderly patients over 60 years old with OM after CRT for HNC. The age range of the patients was between 60 and 83 years old. Among them, 57 patients lived alone, accounting for 18.27%. In daily life, family members, especially spouses, usually assume the role of primary caregivers. They can provide psychological support and daily care for patients, promoting patients to develop good compliance behaviors during the treatment process. An analysis of tumor epidemiology and end-outcome data shows that the risk of death from the disease in married patients is 33% lower than that in unmarried, divorced, or widowed patients (hazard ratio $HR = 0.67$) [32]. Evidently, the lack of family companionship can cause patients to lack social support to a large extent, and the impact on patients’ psychology should not be underestimated. In terms of educational level, 93 patients had a primary school education or below, accounting for 29.81%, and 219 patients had a junior high school education or above, accounting for 70.19%. Most of those with a low educational level are older people from rural areas. Restricted by their educational and cultural levels, this group has relatively poor health awareness and labor skills. In terms of economic status, 79 patients had economic pressure, accounting for 25.32%. When patients are ill, they

bear tremendous pressure from their physical condition, economy, and society. This intense stressor can easily lead to changes or even loss of patients' social and family roles, ultimately resulting in severe self-neglect.

The results of the correlation analysis in this study indicate that, among OM-patients post-CRT for HNC, self - neglect is significantly negatively correlated with basic psychological need satisfaction, psychological resilience, and family resilience. Basic psychological need satisfaction is significantly positively correlated with psychological resilience and family resilience, and there is also a significant positive correlation between psychological resilience and family resilience. Furthermore, a structural equation model was constructed to examine the influencing mechanism of basic psychological need satisfaction on self - neglect. The mediation model shows that basic psychological need satisfaction not only directly affects self-neglect but also indirectly influences self-neglect through the mediating effects of family resilience and psychological resilience.

The results of this study show that, among OM-patients post-CRT for HNC, the satisfaction of basic psychological needs can directly play a negative predictive role in self-neglect. The satisfaction of basic psychological needs can transform the stimuli of external motives such as the external environment, individual personality, and life goals on individuals into internal motives of individuals, enabling individuals to demonstrate a positive attitude towards life. Conversely, when an individual's basic psychological needs are not met, the individual will exhibit amotivation or unstable motivation, making it difficult to maintain healthy living habits, thus triggering self-neglect among the elderly patients. Some research indicates that by improving the satisfaction level of patients' basic psychological needs, their self - management level and quality of life can be enhanced [33]. Evidently, reducing the occurrence of self-neglect can be achieved by improving the satisfaction of the elderly patients' basic psychological needs. In daily nursing, provide patients with detailed information on disease treatment and the rehabilitation process to enhance their sense of control over the disease and meet their autonomy needs. For example, regularly conduct health lectures and distribute illustrated brochures to help patients understand the coping methods and self-care key points for OM after chemoradiotherapy. Encourage patients to participate in their own care decisions, such as choosing suitable oral care products, to enhance their sense of competence. Create a warm and caring ward atmosphere and organize wardmates communication activities to promote emotional communication among patients and meet their relatedness needs.

Family resilience plays a mediating role between the satisfaction of basic psychological needs and self-neglect among OM-patients post-CRT for HNC. The results of the mediation effect analysis show that the indirect effect of family resilience is -0.153 , accounting for 29% of the total effect. Family resilience refers to the ability of family members to work together to maintain stability and obtain more psychological and social resources [34]. As an important part of the family, individuals interact with the family. When the basic psychological needs of patients are not met, it may increase the care burden on family members and the sense of resource shortage, reducing the level of family resilience of patients [35], and thus increasing the incidence of self-neglect among the elderly patients. Conversely, when the basic psychological needs of patients are met, the elderly patients have the ability to take

care of themselves. This can not only lighten the burden on family members, enabling them to have more energy to complete other tasks. At the same time, it also affects the overall family atmosphere, promoting the family to develop in a better direction. A well-developed family can provide sufficient material and emotional support, helping the elderly patients reduce the occurrence of self-neglect [34]. This indicates that in clinical practice, it is necessary to actively give play to family functions to reduce the risk of self-neglect among OM-patients post-CRT for HNC. Medical staff should attach great importance to the construction of the patient's family support system. They can conduct family education lectures to impart knowledge to family members on how to provide emotional support to patients in daily life and assist patients with rehabilitation nursing. Guide family members to pay attention to the psychological changes of patients and give timely encouragement and comfort to enhance family resilience. For example, when patients are reluctant to eat due to oral pain, guide family members to accompany them patiently and try to make soft food that suits the patients' taste.

The results of the mediation effect analysis show that the indirect effect of psychological resilience is -0.181 , accounting for 35% of the total effect. Good psychological resilience is positively correlated with an individual's quality of life and health-promoting behaviors [36]. Based on the perspective of the dynamic model of psychological resilience [37], the higher the degree of satisfaction of basic psychological needs among OM-patients post-CRT for HNC, the more it can help the elderly patients develop psychological resilience traits such as cooperation, problem-solving, and increased self-efficacy. That is, the satisfaction of needs can promote the improvement of psychological resilience. This means that they can actively cope with the pressures and challenges brought by diseases and life [38]. By accepting and tolerating their current situation, they can avoid psychological breakdown and the influence of negative emotions, and maintain the development of individuals in a life-beneficial direction [36], thus reducing the occurrence of self-neglect among the elderly patients. In view of this, clinical medical staff should actively assess the psychological resilience level of the elderly patients, take active measures to improve the satisfaction of their basic psychological needs, cultivate their psychological traits of cooperation, communication, confidence, and competence, help them cope with the pressures brought by life and diseases, and reduce the risk of self-neglect.

Family resilience and psychological resilience play a mediating role in the relationship between the satisfaction of basic psychological needs and self-neglect among OM-patients post-CRT for HNC. The results of the mediation effect analysis show that the indirect effect of family resilience and psychological resilience is -0.056 , accounting for 11% of the total effect. The family is an important micro-living scenario for the elderly patients, and the characteristics of the family may play a significant role in an individual's development [39]. Key elements of family resilience, such as good family support and an open communication atmosphere, contribute to enhancing the psychological resilience level of OM-patients post-CRT for HNC [40]. In conclusion, when the basic psychological needs of OM-patients post-CRT for HNC are met, it can enhance the level of family resilience, further strengthen individual psychological resilience, and reduce the occurrence of self-neglect among the elderly patients. In the future, measures should be taken to promote the satisfaction of the

basic psychological needs of OM-patients post-CRT for HNC. At the same time, efforts are also needed to guide the development of their family resilience and psychological resilience, so as to reduce the incidence of self-neglect.

This study also has some limitations. The cross-sectional research design adopted cannot determine the causal relationships among variables. Moreover, the sample is only from a certain region or a specific medical institution, which may lead to sample bias.

In the future, a longitudinal research design will be employed to track the dynamic changes of various variables during the disease treatment and rehabilitation process of patients, thus further verifying the causal relationships among variables. Additionally, the sample size will be expanded by selecting patients from multiple centers and different regions for research, aiming to improve the representativeness of the research results. Besides, more comprehensive and effective research tools will be developed, and more factors that may affect patients' psychological states will be included in the research.

6. Conclusion

Among OM-patients post-CRT for HNC, the satisfaction of basic psychological needs can directly or indirectly affect their self - neglect through family resilience and psychological resilience. In other words, in daily nursing care, by satisfying patients' basic psychological needs, enhancing their family resilience and psychological resilience, the occurrence of self-neglect in patients can be avoided.

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