

The mediating effect of mindfulness on demoralization syndrome and quality of life of thyroid cancer patients

A correlational study

Li YuYu, MD, RN^a, Zhao Shan, MD, RN^a, Peng JingJun, MD, RN^{a,*} 

Abstract

Demoralization syndrome is prevalence among cancer patients in China. However, little research has examined how demoralization syndrome is associated with quality of life (QOL). The aims of this study were to investigate the relationship between mindfulness state, demoralization syndrome and QOL of thyroid cancer patients, and explore the mediating effect of mindfulness on demoralization syndrome and QOL. A correlational cross-sectional study was performed using an online questionnaire. The study was conducted from July to October 2022 among 310 thyroid cancer patients. General information questionnaire, the Demoralization Scale, Five Facet Mindfulness Questionnaire, short form health survey questionnaire were used for investigation. Calculations were performed using SPSS Statistics, version 25. Descriptive statistics, correlation, and process plug-in mediation effect analyses were used to analyze the data. A total of 310 valid questionnaires were finally recovered. The Five Facet Mindfulness Questionnaire score of 310 patients was (120.80±16.57), Demoralization Scale score was (12.49±4.73), short form health survey questionnaire score was (146.15±28.46). Mindfulness played a partial mediating role between demoralization syndrome and QOL of thyroid cancer patients, and the mediating effect accounted for 68.57% of the total effect. Demoralization syndrome can influence QOL through mindfulness state. Measures are needed to increase the QOL of thyroid cancer patients by developing mindfulness programs to decrease their demoralization syndrome.

Abbreviations: DM = Demoralization Syndrome, DS = Demoralization Scale, FFMQ = Five Facet Mindfulness Questionnaire, MCS = mental component summary, PCS = physical component summary, QOL = quality of life.

Keywords: demoralization syndrome, mindfulness, quality of life

1. Introduction

Thyroid cancer is the most common malignancy of the head and neck, and its global incidence has increased significantly in recent years. According to the cancer statistics of the United States in 2019, there were about 52,100 new thyroid cancer cases in 2019, which has become the third largest malignant tumor in the United States.^[1] According to the epidemiological survey in China, during the 11 years from 2005 to 2015, the incidence of thyroid cancer in China increased by an average annual rate of 12.4%, making it the fastest growing malignant tumor in China.^[2] Surgery is one of the main treatment methods for thyroid cancer. Surgery and the disease itself have certain negative effects on the physiology and psychology of patients, thus affecting their quality of life (QOL). The traditional goal of treatment is to reduce postoperative complications and reduce the risk of death. However, with the transition from the traditional medical model to the bio-psycho-social medical model, the QOL of postoperative patients

has become an important outcome indicator for researchers. QOL is a multi-dimensional evaluation of patients' physical, psychological and social functioning.^[3–5] Clinical research and evaluation of QOL in patients with thyroid cancer can contribute to a comprehensive and systematic evaluation of patients.

With the development of science and technology, the level of thyroid cancer treatment has been greatly improved, and the survival period of patients has been continuously extended. Longer survival has been accompanied by increased psychological problems.^[6] Studies have shown that the incidence of mental illness in cancer patients is 3 times that of the general population.^[7] Demoralization Syndrome (DM) is a state of psychological distress caused by a series of negative life events, in which patients are continuously unable to cope for a period of time, and then show feelings of helplessness, hopelessness, meaninglessness, subjective incompetence and impaired self-esteem.^[8] The emergence of DM is

LYY and ZS contributed equally to this work.

The authors have no funding and conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

^a Department of Thyroid, Guangzhou Hospital, Guangdong, China.

*Correspondence: Peng JingJun, Department of Thyroid, Guangzhou Hospital, No.106 Zhongshan Second Road, Yuexiu District, Guangzhou, Guangdong Province 150000, China (e-mail: pengjingjun123@163.com).

Copyright © 2023 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and build up the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

How to cite this article: YuYu L, Shan Z, JingJun P. The mediating effect of mindfulness on demoralization syndrome and quality of life of thyroid cancer patients: A correlational study. *Medicine* 2023;102:7(e32719).

Received: 7 December 2022 / Received in final form: 1 January 2023 / Accepted: 3 January 2023

<http://dx.doi.org/10.1097/MD.00000000000032719>

often accompanied by anxiety, depression, despair and other psychological problems, resulting in sleep disorders, reduced self-esteem, shortened expected survival time, family and social burden increase.^[9] Many studies have shown that there is an important relationship between DM and QOL in cancer patients, while there is little evidence about the mediator factors between them.^[10,11]

Mindfulness is a positive psychological state of individuals in the process of growth and development, including improving the negative emotions and QOL in different populations.^[11–13] Mindfulness is the goal of shifting attention purposefully from being aware of involuntary inner activities to the present experience, and being curious, open, and receptive to that experience. The essence of mindfulness is the mental process of individual self-regulation. It affects the sensory perception, attention and emotional regulation of individuals,^[14] and people stop unhealthy behaviors through self-awareness and rational thinking. Relieve the burden of disease and guilt, so as to improve the confidence of patients to overcome the disease, improve the QOL. Previous studies have revealed the relationship between mindfulness and QOL of cancer patients.^[15,16] Focus on QOL among cancer patients has been increasing in recent years. Although some studies believe that when individuals have a high mindfulness state, their QOL will be improved, but little research has focus on the view of mindfulness on DM. Is the relationship between DM and QOL affected by mindfulness state? At present, few studies have explored the relationship between them.

Consequently, on the basis of review of the literature, the aims of the study were to ① assess the level of DM of thyroid cancer in China and to ② examine the associations between DM, mindfulness and QOL in thyroid cancer and to ③ explore the mediating effects of mindfulness on DM and QOL.

2. Methods

2.1. Design and sample

This descriptive correlation study was designed to examine the relationship among mindfulness state, demoralization syndrome and QOL of thyroid cancer patients. A convenience sample was used to select patients from July to October 2022. The inclusion criteria were at least 18 years old, with clear consciousness and barrier-free communication; for the first time, the lymph dissection site in the lateral area was unilateral; obtain the consent of the patient. Exclusion criteria: persons with mental illness or cognitive impairment; two or more operations for thyroid cancer. The sample size was calculated according to the literature that the medium required sample size to detect the mediated effect was 200 participants.^[17] Initially, there were 310 patients participate in this study and surveys with invalid data and missing data were eliminated, finally, a total of 310 valid questionnaires were included in the analysis, with an effective recovery rate of 100%.

2.2. Instruments

The basic demographic questionnaire: this study collected demographic characteristics which included age, gender, grade, work status, marriage status, residence, education level, religious and so on.

Five Facet Mindfulness Questionnaire (FFMQ): The FFMQ was compiled by Baer in 2006 and revised by Deng into Chinese version in 2011.^[18] The scale includes 39 items and each item is scored on a 5-point Likert scale ranging from 1 (completely inconsistent) to 5 (completely consistent). The total score ranges from 39 to 195, and the higher the score is, the more mindfulness state. The scale has good reliability and validity. The Cronbach's α was 0.84 in the previous study^[19] and 0.86 in this study.

Demoralization Scale (DS): The Chinese version of DS was revised according to the version developed Robinson in 2016.^[20] The scale includes 16 items, which are divided into 2 dimensions. Each item is scored on a 3-point Likert scale ranging from 0 (never) to 2 (always). The total ranges from 0 to 32, and the total score was less than 9 for mild demoralization, 10 to 19 for moderate demoralization, and >20 for severe demoralization. The scale has good reliability and validity. The Cronbach's α was 0.87 in the previous study^[21] and 0.86 in this study.

The short form health survey questionnaire: the 36-item QOL scale included physical component summary (PCS) and mental component summary (MCS). PCS consists of 4 subcategories, including physical function, role physical, bodily pain and general health. MCS consists of 4 subcategories, including vitality, social function, role emotional and mental health. Both PCS and MCS scores ranged from 0 to 100 points, with higher scores indicating better QOL of respondents. This scale has been widely used among Chinese populations and has good reliability and validity. The Cronbach's α was 0.87 in the previous study^[22] and 0.85 in this study.

2.3. Data collection

This study was approved by the Ethics Committee of the Hospital. With the informed consent of the patients, the researchers and trained researchers issued paper questionnaires in the inpatient wards of 3 Grade A hospitals in Guangdong City for data collection, and disease-related data were collected by the researchers through the electronic medical record system of the hospital. The questionnaire was completed by the subjects independently. If the subjects were dyslexic due to limited education or visual impairment, the researchers could read the questionnaire items and options to help them complete the questionnaire. After the questionnaire was collected, the researchers carefully checked the reliability of missing items and wrong items filled in the questionnaire as well as the preliminary review questionnaire. In case of missing items or wrong items, the subjects were asked to supplement or correct them in time.

2.4. Data analysis

The Statistical Packages for Social Sciences, version 25 (IBM Corp., Chicago, IL) was used to analyze the data. The mean and standard deviation of procrastination behavior of different ages and grades were analyzed by descriptive statistics, independent sample *t* test and 1-way ANOVA. Pearson's correlation test was used to investigate the relationship among DS, FFMQ and short form health survey questionnaire. The mediation effect test model of Bootstrap was used to test and analyze the mediating effect of mindfulness whether played a mediating role between QOL and demoralization syndrome. A *P* value $\leq .05$ was considered statistically significant.

2.5. Ethical considerations

This study was approved by the Ethics committee of Hospital. The researcher illustrated the aim of the study and promise that all data would be anonymized. Participants can withdraw from the study at any time with any reason. The informed consent form was completed by each participants.

3. Results

3.1. The distribution of demographic characteristics

The average age of the participants was 40.38 ± 9.58 years with a range of 27 to 65 years. Most participants were female (72.9%). The residence in urban accounted for 86.1%. More than half of the participants have the college degree or above

education degree(74.2%) and few of the participants (11.6%) has religious.

3.2. Comparison of DS scores of participants with different demographic characteristics

As shown in Table 1, the total score of DS has significant differences among gender ($F = 7.29, P < .01$), marriage status ($F = 9.62, P < .01$), education Level ($F = 11.20, P < .01$), average income ($F = 16.74, P < .01$) and religious ($F = 10.76, P < .01$), however there was no significance among different residence w($P > .05$).

3.3. The relationship between mindfulness, demoralization syndrome and QOL of patients

The mean scores of mindfulness, demoralization syndrome and QOL were found to be 120.80 ± 16.57 , 12.49 ± 4.73 , and 146.15 ± 28.46 , respectively. Furthermore, Table 2 showed the significant negative correlations between participants' demoralization syndrome and mindfulness ($r = -0.57, P < .01$) and QOL ($r = -0.42, P < .01$). Mindfulness had a significant positive correlation with QOL ($R = 0.58, P < .01$).

3.4. The mediating role of mindfulness in the relationship between demoralization syndrome and QOL

In the regression analysis, we set QOL as the dependent variable and demoralization syndrome as the independent variable and mindfulness as mediating variable. The results showed that the Bootstrap 95% confidence intervals of the direct and indirect effects of demoralization syndrome on QOL did not

contain 0, indicating that mindfulness played a partial mediating role between demoralization syndrome and QOL, with an explanatory power of 68.57%. The results of standardized total effect and standardized direct effect were shown in Table 3.

4. Discussion

To our best knowledge, this is the first study to investigate the relationship of mindfulness, demoralization syndrome and QOL among thyroid cancer patients in China which yield that the mindfulness has a mediating effect between demoralization syndrome and QOL.

4.1. The level of demoralization syndrome among thyroid cancer patients

The score of demoralization syndrome was 12.49 ± 4.73 which indicated was a medium level. More specifically, 44.56% with moderate demoralization syndrome and 3.89% with severe demoralization syndrome. The incidence of moderate to severe demoralization syndrome was slightly higher than the study result of other researches.^[23,24] The reason may be that the cultural background of the research objects is different. Death education is carried out earlier in foreign countries, and the education of cancer related knowledge is also more popular. However, in China, due to the influence of traditional culture, people avoid death, and it is difficult to carry out death education. In addition, people talk about cancer differently, so the popularization of cancer-related knowledge is limited.

The results showed that the degree of demoralization syndrome of female patients was significantly higher than that of

Table 1
The difference between of different groups of DS (N = 310).

	Variables	n	%	DS Score	t/F	P
Gender	Male	84	27.1	11.88±3.48	7.29*	<.01
	Female	226	72.9	13.18±3.08		
Marriage status	Single	69	22.3	12.15±3.33	9.62†	<.01
	Married	198	63.9	10.70±3.40		
	Divorce	43	13.8	13.63±4.46		
Residence	Urban	267	86.1	12.65±3.07	1.49*	.14
	Rural	43	13.9	12.20±3.58		
Education level	Primary School or below	34	11.0	14.54±5.84	11.20†	<.01
	Senior	80	25.8	12.13±4.20		
	College degree or above	196	74.2	9.07±4.20		
Average income (per month)	<3000 RMB	23	7.4	13.08±3.49	16.74†	<.01
	3000–5000 RMB	101	32.6	12.74±4.28		
	>5000 RMB	186	60.0	9.74±5.07		
Religious	Yes	36	11.6	10.55±4.17	10.76*	<.01
	No	274	88.4	13.08±5.74		

DS = Demoralization Scale.
† t test.
* One-way analysis of variance.

Table 2
Means and correlation coefficients of the variables (N = 310).

Variables	Mean ± SD	Mindfulness (r)	Demoralization syndrome (r)
Mindfulness	120.80 ± 16.57		
Demoralization syndrome	12.49 ± 4.73	-0.57*	
Quality of life	146.15 ± 28.46	0.58*	-0.42*

SD = standard deviation.
*P < .01.

Table 3
Mediating analyze of mindfulness in the relationship between demoralization syndrome and quality of life (N = 310).

	β	SE	95% CI		Account
			Lower	Upper	
Total effect	-0.70	0.08	-0.62	-0.35	
Direct effect	-0.22	0.09	-0.38	-0.04	31.43%
Indirect effect	-0.48	0.07	-0.86	-0.54	68.57%

male patients ($P < .01$). This is the same result as Vehling et al.^[25] Female patients have weaker psychological endurance than male patients. In the face of stressful events, they are more likely to produce negative emotions, and more likely to appear unable to cope. The results of this study showed that the lower the education level, the higher the degree of demoralization syndrome ($P < .05$), which is consistent with the results of Bailey et al.^[26] Education provides effective resources for dealing with serious diseases and plays a crucial role in improving disease-related health literacy in particular. The low level of education often makes patients less able to acquire disease-related knowledge and cope with the symptoms caused by the disease. Meanwhile, the low level of education may mean a lower income, which makes it difficult to afford the high cost of treatment, and thus more prone to a higher level of demoralization syndrome.^[21]

4.2. Mindfulness has a negative predictive effect on demoralization syndrome

The results showed that mindfulness has a negative predictive effect on demoralization syndrome. This is the first study to investigate the relationship between them among cancer patients. When patients have certain “observation” ability for their true inner feelings, they can promote “conscious action,” consciously regulate bad emotions, and help patients better psychological management of symptoms, so as to reduce the occurrence of demoralization syndrome. Some studies believe that patients with higher levels of mindfulness can more quickly accept negative physical and mental problems during treatment, and form rational thinking patterns through “self-awareness” to relieve negative feelings.^[27] It is suggested that clinical staffs can set up mindfulness cultivation programs to prevent the demoralization syndrome among cancer patients.

4.3. Mindfulness plays a mediating role between demoralization syndrome and QOL in thyroid cancer patients

This study found that mindfulness played a partial mediating role between demoralization syndrome and QOL in thyroid cancer patients, that is, demoralization syndrome can directly affect QOL of thyroid cancer patients, and also can indirectly affect QOL through mindfulness. Patients with high level of mindfulness can treat their illness and life with a peaceful and accepting attitude, and help patients improve their emotional stability and ability to deal with pressure, so as to obtain good psychological adaptation and personal development.^[28] Mindfulness mentality belongs to the category of positive psychology. As an individual positive psychological capital, it can enable patients to take a positive response to the disease, cooperate with the treatment more actively, promote the health of patients, so as to maintain a good mental state and mediate the demoralization syndrome on QOL.^[29] As a psychological safety net and buffer zone for patients, patients with a good level of mindfulness have strong psycho-social adaptability and are more likely to adopt a peaceful attitude and behavioral measures to traumatic stress events, that is, non-judgmental attitude to deal with the disease, so as to reduce the negative psychological feelings of patients and improve the status of patients with demoralization syndrome.^[30] At the same time, part of the mediating effect of mindfulness also suggests that a high level of mindfulness can still promote positive emotions and improve the QOL of patients even if the level of demoralization syndrome is high. Therefore, in clinical practice, medical staff should help patients make full use of mindfulness to cope with the disease, so as to improve the prognosis of the disease and reduce the psychological pressure of patients.

4.4. Limitations

Although this study identified the relationship of nursing students’ psychological capital, achievement motivation and procrastination behavior, there were still limitations to this study. Firstly, the participants of this study were recruited from 1 hospital, the results cannot be generalized due to the sample selection method and data collection method, readers need to raise caution when applying our findings to other countries or from different cultural backgrounds. Further studies should be conducted on larger samples in different cultures. Moreover, the self-report nature of the measures mean that responses are subject to bias and socially desirable responding.

5. Conclusion

The results in this study suggested that the demoralization syndrome of thyroid cancer patients was high and was negatively associated with the QOL. Moreover, this study confirmed the mediating effect of mindfulness on demoralization syndrome and QOL in thyroid cancer patients. The results of this study could help clinical staffs better understand the relationship between them. It is suggested that clinical staffs should ought to assist patients in cultivating mindfulness state as a means to decrease the demoralization syndrome and thus improve the QOL.

Acknowledgements

All authors were grateful for all the participants and all student counselors in this study for their corporation.

Author contributions

Conceptualization: Peng JingJun, Zhao Shan, Li YuYu.

Formal analysis: Peng JingJun, Li YuYu.

Investigation: Peng JingJun, Li YuYu.

Methodology: Zhao Shan, Li YuYu.

Project administration: Zhao Shan, Li YuYu.

Software: Peng JingJun, Zhao Shan.

Validation: Peng JingJun, Zhao Shan, Li YuYu.

Visualization: Zhao Shan, Li YuYu.

Writing – original draft: Peng JingJun, Zhao Shan, Li YuYu.

Writing – review & editing: Peng JingJun, Zhao Shan, Li YuYu.

References

- [1] Siegel RL, Miller KD, Jemal A. Cancer statistics, 2019. *CA Cancer J Clin.* 2019;69:7–34.
- [2] Wang JY, Yu FF, Shang YN, et al. Thyroid cancer: incidence and mortality trends in China, 2005-2015. *Endocrine.* 2020;68:163–73.
- [3] Pacini F, Castagna MG, Brillì L, et al.; ESMO Guidelines Working Group. Differentiated thyroid cancer: ESMO clinical recommendations for diagnosis, treatment and follow-up. *Ann Oncol.* 2009;20(Suppl4):143–6.
- [4] Wang R, Wu C, Zhao Y, et al. Health related quality of life measured by SF-36: a population-based study in Shanghai, China. *BMC Public Health.* 2008;8:292.
- [5] Hillary SL, Chooi JE, Wadsley J, et al. Quality of Life in Post-Surgical Hypoparathyroidism (PoSH) in thyroid and parathyroid surgery. *World J Surg.* 2022;46:3025–33.
- [6] Eli Tsai WCY, Shi HY, Huang CM. Prediction models of anxiety and depressive disorders among gynecologic cancer patients. *J Healthc Manag.* 2017;18:335–53.
- [7] Brewer BW, Caspari JM, Youngwerth J, et al. Demoralization in medical illness: feasibility and acceptability of a pilot educational intervention for inpatient oncology nurses. *Palliat Support Care.* 2018;16:503–10.
- [8] Robinson S, Kissane DW, Brooker J, et al. A systematic review of the demoralization syndrome in individuals with progressive disease and cancer: a decade of research. *J Pain Symptom Manage.* 2015;49:595–610.
- [9] Vehling S, Kissane DW, Lo C, et al. The association of demoralization with mental disorders and suicidal ideation in patients with cancer. *Cancer.* 2017;123:3394–401.

- [10] Robinson S, Kissane DW, Brooker J, et al. The relationship between poor quality of life and desire to hasten death: a multiple mediation model examining the contributions of depression, demoralization, loss of control, and low self worth. *J Pain Symptom Manage.* 2017;53:243–9.
- [11] Fang CK, Chang MC, Chen PJ, et al. A correlational study of suicidal ideation with psychological distress, depression, and demoralization in patients with cancer. *Support Care Cancer.* 2014;22:3165–74.
- [12] Parsons CE, Crane C, Parsons LJ, et al. Home practice in mindfulness-based cognitive therapy and mindfulness-based stress reduction: a systematic review and meta-analysis of participants' mindfulness practice and its association with outcomes. *Behav Res Ther.* 2017;95:29–41.
- [13] Gu J, Strauss C, Bond R, et al. How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and well being? A systematic review and meta-analysis of mediation studies. *Clin Psychol Rev.* 2015;37:1–12.
- [14] Carlson LE, Doll R, Stephen J, et al. Randomized controlled trial of mindfulness-based cancer recovery versus supportive expressive group therapy for distressed survivors of breast cancer. *J Clin Oncol.* 2013;31:3119–26.
- [15] Wang L, Chen X, Peng Y, et al. Effect of a 4-week internet-delivered mindfulness-based cancer recovery intervention on the symptom burden and quality of life of patients with breast cancer: randomized controlled trial. *J Med Internet Res.* 2022;24:e40059.
- [16] Marinovic DA, Hunter RL. Examining the interrelationships between mindfulness-based interventions, depression, inflammation, and cancer survival. *CA Cancer J Clin.* 2022;72:490–502.
- [17] Vittinghoff E, Sen S, McCulloch CE. Sample size calculations for evaluating mediation. *Stat Med.* 2009;28:541–57.
- [18] Baer RA, Sfnith GT, Hopkins J, et al. Using self-report assessment methods to explore facets of mindfulness. *Assessment.* 2006;13:27–45.
- [19] Deng YQ, Liu XH, Rodriguez MA, et al. The five facet mindfulness questionnaire: psychometric properties of the Chinese version. *Mindfulness.* 2011;2:123–8.
- [20] Robinson S, Kissane DW, Brooker J, et al. Refinement and revalidation of the demoralization scale: the DS-II internal validity. *Cancer.* 2016;122:2251–9.
- [21] Ou N, Hu XP, Qi SY, et al. The Chinese version of the demoralization scale-II: development, reliability and validity in Chinese cancer patients. *Chin General Pract.* 2021;24:2998–3004.
- [22] Liu J, Qu B, Hu B, et al. The quality of life of men who have sex with men in China: reliability and validity testing of the SF-36 questionnaire. *PLoS One.* 2013;8:e83362.
- [23] Julio M, Nunes B, Barbosa A. Prevalence and factors associated with demoralization syndrome in patients with advanced disease: results from a cross sectional Portuguese study. *Palliat Support Care.* 2016;14:468–73.
- [24] Belar A, Arantzamendi M, Rodriguez Nunez A, et al. Multicenter study of the psychometric properties of the new Demoralization Scale (DS-II) in Spanish-speaking advanced cancer patients. *J Pain Symptom Manage.* 2019;57:627–34.
- [25] Vehling S, Oechsle K, Koch U, et al. Receiving palliative treatment moderates the effect of age and gender on demoralization in patients with cancer. *PLoS One.* 2013;8:e59417.
- [26] Bailey C, Doyle Z, Dearin J, et al. Demoralization and chronic illness in rural Australia: a cross sectional survey. *Palliat Support Care.* 2020;18:271–6.
- [27] Jings, Zhang A, Chen Y, et al. Mindfulness-based interventions for breast cancer patients in China across outcome domains: a systematic review and meta-analysis of the Chinese literature. *Support Care Cancer.* 2021;29:5611–21.
- [28] Carlson LE. Mindfulness-based interventions for coping with cancer. *Ann N Y Acad Sci.* 2016;1373:5–12.
- [29] Roberts KC, Danoffbury S. Mindfulness and health behaviors: is paying attention good for you. *J Am College Heal J Ach.* 2010;59:165–73.
- [30] Lin LY, Lin LH, Tzeng GL, et al. Effects of mindfulness-based therapy for cancer patients: a systematic review and meta-analysis. *J Clin Psychol Med S.* 2022;29:432–45.