

RESEARCH ARTICLE

Coping strategies in patients undergoing surgery treatment for pituitary tumour in China: A cross-sectional survey

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Abstract

Aim: To explore the coping strategies and corresponding influence factors in patients undergone surgeries for pituitary tumours.

Design: A cross-sectional study.

Methods: Patients diagnosed with pituitary tumours were included. The Medical Coping Questionnaire (MCMQ) and a demographic questionnaire were used for data collection.

Results: A total of 150 patients with pituitary tumour undergoing surgery treatment were included. Compared with the a-select sample, patients with pituitary tumours reported more avoidant coping ($p < .0001$) and more resigned coping ($p = .031$) but less confrontation coping ($p = .026$). Multiple regression analysis showed the regardless of recurrence or not, the type and size of pituitary tumour, education level, family income are the factors influencing the coping style (all $p < .05$).

Conclusions: Clinical workers should pay more attention to the patients with multiplied pituitary tumour, huge adenoma, recurred tumour, low levels of education and low monthly income.

KEYWORDS

care, coping strategies, nursing, pituitary tumours, quality of life

1 | BACKGROUND

Pituitary adenomas are benign neoplasms that account for 10%–15% of all diagnosed intracranial tumours, and they are the most common type of pituitary disorder (Castellanos, Gutierrez et al., 2021; Di Somma et al., 2021; Famini et al., 2011). Pituitary adenomas may result in considerable adverse consequences such as hormone overproduction and tumour mass effects, thus the physical and psychological conditions of patients may comprised and the quality of life (QoL) (Biamonte et al., 2021; Castellanos, Misra et al., 2021; Dallel et al., 2021). The impairment of QoL have been ensured in patients

in biochemical remission of Cushing's disease (CD), non-functioning macroadenoma (NFA), acromegaly (ACRO) and prolactinoma (PRL) (Andela et al., 2015; Valassi et al., 2018; Vega-Beyhart & Enriquez-Estrada, 2019). However, the factors explaining consistently impaired QoL in patients undergone surgeries have not been well established.

Coping is the way in which someone reacts (behaviourally, cognitively and emotionally) to conditions requiring adjustments for overcoming an adverse event and/or its consequences (i.e. an illness and its treatment) (Auerbach et al., 2010; Greer et al., 2020). Nevertheless, the studies on coping strategies for pituitary

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adenomas are quite few. Tiemensma et al. (2011) found that pituitary adenomas displayed different and less effective coping strategies compared with healthy controls. Crespo et al. (2015) concluded that QoL was impaired in patients with adults with growth hormone deficiency (AGHD) of any cause, particular for those who had additional hypopituitarism and got improved after replacement therapy with recombinant human growth hormone (rhGH), worsen QoL was seen in patients who suffered from insomnia, depression, negative illness perceptions. Obviously, the adverse effects and bad influence caused by pituitary adenomas are quite annoying, seeking the risk indicators should be put on the top agenda for research (Luger et al., 2021).

To the best of our knowledge, the coping strategies in patients with pituitary tumours remain unknown, and no study has reported the factors influencing the coping strategies in patient undergone surgery for pituitary tumour; therefore, we aimed to explore the coping strategies in patients with pituitary tumour and by means of analysing the various dimensions of coping to identify the main factors that influence coping strategies.

2 | METHODS

2.1 | Study design

A cross-sectional survey design was adopted. With consideration to the convenience and feasibility, we compared the survey participants with reference population: a α -selected sample from the Chinese population.

2.2 | Participants

Patients with pituitary tumours who had undergone surgery treatment in our hospital from January 1, 2019 to December 31, 2020 were surveyed. Patient selection was based on pre-specified criteria which included: (1) the age were over 18 years old; (2) had accepted the surgery for pituitary adenoma; (3) patients were willing to participant in our study. Those patients did not agree to take part in our study were excluded.

2.3 | Data collection

Two questionnaires were adopted for data collection in this study: (1) Demographic questionnaire, two parts were included in this questionnaire: personal characteristics and disease-related information. The personal characteristics part included age, gender, body mass index (BMI), diabetes, hypertension, hyperlipidaemia, education level and family income, which was completed by patients, while the disease-related information was obtained from medical records, the information included the type and side of pituitary tumour, the time to surgery finished, the tumours have been recurred or not.

(2) Medical coping modes questionnaire (MCMQ), as originally conceived by Feifel et al. (1987), the MCMQ is a 19-item questionnaire that purports to measure the extent to which patients use three cognitive-behavioural coping strategies (confrontation, avoidance and acceptance-resigned) in dealing with their illness. The measure was constructed following a combination of rational and factor analytic procedures from a pool of coping strategies commonly reported by patients (Shen & Jiang, 2000). It has been a frequently used measure on coping strategies in medical patients (Rodrigue et al., 1993). Items are answered on a four-point continuum ranging from one (never) to four (very much). Feifel et al. (1987) reported that internal consistency estimates using Cronbach's alpha were moderate: confrontive (0.70), avoidance (0.66) and acceptance-resigned (0.67). Besides, they noted that coping modes were not considered to be as stable as personality traits, and generally lower internal consistency estimates may be expected on measures of coping. In addition, they reported excellent construct validity based on a personality measure (DePalma & Nideffer, 1977), a set of questions asking patients about their attitudes toward and coping reactions to their illness, and responses to a questionnaire from patients' physicians and statistically significant others.

2.4 | Data analysis

SPSS 22.0 for Windows/PC packaged software was adopted for data analysis. The data information were arranged and input into computer by two independent person, all data were presented as mean SD, the primary analysis comprised the comparison on the results in patients undergone surgery for pituitary adenoma and outcomes in various reference groups, means were calculated for all subscales and compared between groups using Student's *t*-test and analysis of variance, multivariate regression analysis was applied for ascertaining the factors influencing the coping styles, general linear model was used to compare the scores.

3 | RESULTS

3.1 | The characteristics of included patients

A total of 150 patients with pituitary tumours undergone surgery were included, the characteristics of included pituitary patients were presented in Table 1.

3.2 | The coping strategies in patients undergone surgery

Table 2 shows the coping strategies in patients undergone surgery for pituitary tumours. Confrontation scores was lower than the normal population ($p = .026$); avoidance scores higher than the norm ($p < .001$) and Resigned scores higher than the norm ($p = .031$).

The univariate analyses of coping strategies for patients with pituitary tumours were indicated in Table 3. The results indicated that education, profession and monthly income were the impacting factors of confrontation scores (all $p < .05$), meanwhile, the monthly income also tended to affect the resigned scores ($p = .004$), the resigned scores are higher in patients with recurrence than patients without recurrence ($p = .007$). Besides, the types and sizes of pituitary tumour exerted statistically significant influences on the confrontation and resigned scores, yet only the types of pituitary tumour produced an impact on avoidance scores ($p < .05$).

We handled each dimension score as the dependent variable, and baseline factors impacting coping styles as independent variables, using multiple linear regression analysis. The statistically significant factors are presented in Table 4.

4 | DISCUSSION

This explorative study demonstrates that compared with the α -select sample from the Chinese population, patients undergone

surgery for pituitary adenomas report less confrontation coping, more avoidant coping and more resigned coping. A review by Tiemensma et al. (2011) found that patients treated for pituitary adenomas displayed different and less effective coping strategies compared with healthy controls. The physical and psychological residual morbidity and worse coping strategies in patients with pituitary tumours lead to persistently impaired QoL and worsen long-term prognosis (Andela et al., 2017; Jaurisch-Hancke et al., 2021). Awareness of these problems by the medical staff and family members may benefit the long-term follow-up and prognosis and should take it into mind when discussing treatment options and long-term outcome with patients (Zhu et al., 2021). Psychological comfort, social support and effective rehabilitation guidance, detailed health education should be resorted to reduce the physical and psychological burden of patients with pituitary tumours (Dolci et al., 2021; Marx et al., 2021), and it is recognized that overwhelmingly avoided, resigned coping may make a negative impact on the disease, while appropriately guiding patients to take more active coping strategies are necessary.

In this study, the multivariate regression analysis showed that gender, age, marital status and other demographic characteristics were not the statistically significant impacting factors on coping strategies, while the level of education seemed to be positively correlated with confrontation score, patients with higher education tended to seek more confrontation coping strategies, and they are suspected to acquire more disease-related knowledge and information and have more access to relevant knowledge and information (de Rooij et al., 2019; Torabi et al., 2018). Furthermore, they may be easier to actively interact their own treatment programs and rehabilitation status with medical staff (Herens et al., 2016), this may explain why their confrontation scores are rather high. From the other hand, for patients with lower level of education, we should take initiatives to give them relevant knowledge and information, by means of carrying out diseases-related lectures, doing telephone interviews and more home visits et al, for the purpose of actively combating the diseases (Bitz et al., 2020; von Heymann-Horan et al., 2019).

Good economic situation is the foundation to get the best treatment and rehabilitation for effective recovery, concerning the medical costs may cause tremendous economic pressure to patients (Lobatto et al., 2018), particularly for those who are lack of reliable financial support with low-income levels. During our investigation, many patients complained that medical insurance system did not cover the necessary medical service, for example when the patients were doing MRI, pituitary full blood examination and some other examining projects. Therefore, the financial

TABLE 1 The characteristics of included pituitary patients

Variables	Pituitary patients (n = 150)
Male/female	58/92
Age (year)	45.13 ± 9.81
BMI (kg/m ²)	24.01 ± 3.97
Diabetes	41 (27.33%)
Hypertension	88 (58.67%)
Hyperlipidaemia	47 (31.33%)
Types of pituitary tumour	
NFMA	60 (40.00%)
Prolactinoma	49 (32.67%)
Acromegaly	22 (14.67%)
Cushing's disease	19 (12.67%)
Size of pituitary tumour	
Large adenomas	93 (62.00%)
Microadenoma	39 (26.00%)
Macroadenoma	18 (12.00%)
Duration of hospital stay(days)	12.36 ± 3.44

Abbreviations: BMI, body mass index; NFMA, non-functioning macroadenoma.

MCMQ	Pituitary tumours (n = 150)	The general population (n = 701)	t	p
Confrontation	18.92 ± 3.04	19.48 ± 3.81	-1.690	.026
Avoidance	16.07 ± 2.73	14.44 ± 2.97	6.189	.000
Resigned	9.37 ± 3.138	8.81 ± 3.17	1.968	.031

Abbreviation: MCMQ, medical coping modes questionnaire.

TABLE 2 Comparison of the MCMQ scores of pituitary patients to the general population

TABLE 3 Univariate analysis of coping strategies in patients with pituitary tumours

Variable	N (%)	Confrontation	Avoidance	Resigned
Age				
19–35	38 (25.33)	19.55 ± 3.59	16.10 ± 2.47	8.43 ± 2.96
36–60	91 (60.67)	18.96 ± 2.80	16.23 ± 2.45	9.53 ± 3.18
>60	21 (14.00%)	18.92 ± 3.04	15.45 ± 3.19	11.30 ± 2.52
<i>F</i>		1.775	0.965	1.704
<i>p</i>		.044	.485	.062
Levels of education				
Primary school	39 (26.00%)	17.88 ± 2.74	16.00 ± 3.10	9.77 ± 2.84
Junior high school	37 (24.67%)	18.17 ± 2.53	16.05 ± 1.81	9.49 ± 3.66
Senior middle school	35 (23.33%)	18.69 ± 2.79	16.17 ± 2.55	10.58 ± 3.48
University and above	39 (26.00%)	21.09 ± 3.30	16.24 ± 2.48	8.21 ± 2.31
<i>F</i>		2.584	0.708	0.866
<i>p</i>		.002	.753	.596
Profession				
Institution workers	64 (42.67%)	19.88 ± 3.03	16.05 ± 2.44	8.92 ± 2.91
Farmer	35 (23.33%)	18.03 ± 2.82	16.52 ± 2.71	9.87 ± 3.55
Retirement	19 (12.67%)	17.59 ± 2.74	15.41 ± 2.63	10.95 ± 2.95
Others	32 (21.33%)	18.23 ± 2.79	16.32 ± 2.70	9.32 ± 3.15
<i>F</i>		2.292	1.271	0.670
<i>p</i>		.005	.238	.800
Monthly income (RMB)				
<3,000	48 (32.00%)	18.61 ± 3.21	16.08 ± 3.06	10.27 ± 3.52
3,000–5,000	90 (60.00%)	19.60 ± 2.56	16.25 ± 2.30	9.21 ± 2.83
>5,000	12 (8.00%)	20.13 ± 3.72	16.15 ± 2.66	8.01 ± 3.30
<i>F</i>		3.143	0.379	2.642
<i>p</i>		.048	.685	.004
Recurrence or not				
Yes	27 (18.00%)	18.69 ± 3.30	15.92 ± 2.06	11.69 ± 3.79
No	123 (82.00%)	19.71 ± 3.57	16.17 ± 2.72	9.26 ± 3.01
<i>t</i>		-1.366	-0.451	3.629
<i>p</i>		.325	.752	.007
Type of pituitary tumour				
PRL	49 (32.66)	20.23 ± 3.38	15.62 ± 3.59	8.46 ± 2.52
GH	22 (14.67)	17.86 ± 3.01	15.96 ± 2.40	10.10 ± 3.72
ACTH	19 (12.67)	16.50 ± 3.80	16.14 ± 2.63	13.50 ± 3.95
NFMA	60 (40.00)	20.16 ± 3.42	17.80 ± 3.08	9.40 ± 2.83
<i>F</i>		5.885	3.930	9.50
<i>p</i>		.001	.017	.000
Size of pituitary tumour				
Microadenomas	39 (26.00%)	21.08 ± 3.31	16.46 ± 2.48	8.92 ± 2.47
Large adenomas	93 (62.00%)	19.22 ± 3.58	16.16 ± 2.67	9.36 ± 3.13
Macroadenomas	18 (12.00%)	17.89 ± 2.09	15.33 ± 3.08	13.11 ± 3.85
<i>F</i>		5.325	0.684	7.242
<i>p</i>		.006	.506	.001

supports from the community and government, the construction of a sound health insurance system are needed as soon as possible, for aim of maximizing radiation to correct the reimbursement

system on clinic treatment costs, and medical workers should rationalize the medical resources, give full support and understanding to the patient for the purpose of relieving and diverting the

Dependent variable	Independent variables	Standardized coefficients	t	p
Confrontation	Constant	-		
	Type	0.211	2.113	.043
	Side	-0.289	-3.300	.001
	Level of education	0.405	3.610	.000
Avoidance	Constant	-		
	Type	0.374	2.003	.032
Resigned	Constant	-		
	Side	0.264	3.513	.000
	Recurrence	-0.212	-2.313	.017
	Monthly income	-0.386	-3.993	.000

TABLE 4 Multiple linear regression analysis of coping strategies in patients with pituitary tumours

Note: Confrontation $R^2 = .401$, Avoidance $R^2 = .217$, Resigned $R^2 = .245$.

patient's concerns (Chittem, 2014; Elizondo Rodriguez et al., 2022; Richardson et al., 2017).

In this study, the disease recurrence or not mainly affected resigned scores. As reported by Arnold et al. (2009), pituitary tumour overall 5-year recurrence rate is 7%–35%, a simple surgical recurrence rate is 45%–75%. High recurrence rate in patients with the disease and other conditions lead patients to take resigned coping, with incline to adopt the powerless and fatalistic attitude, it may potentially exert an important impact on the quality of life, treatment compliance, doctor-patient and nurse-patient communication, also it is not conducive to treatment and rehabilitation of patients with the disease (Okati-Aliabad et al., 2022; Sagan et al., 2021). Medical workers should be concerned about the problem of recurrence in patients with pituitary tumours, pay more attentions to the life attitude and mental state of recurrent patients (Zhang et al., 2021; Zhu et al., 2021). Earlier identification of patients with negative cognition and emotion may alert us to give early psychological guidance and emotional support for improving the patients' QoL (Alshammari et al., 2021).

The results of this study showed that, the type of pituitary tumour did affect the confrontation and avoidance scores ($p < .05$). Just as Alcalar et al. (2013) shown that, the ACTH patients had more anxiety, depression, fatigue, happiness and impaired QoL than other types of patients, even in remission they still had lots of problems. Clinically we should make earlier identification on the coping strategies of different pituitary tumours patients, especially for those suffering from ACTH, and give them related disease education and psychological guidance, establish a good nurse-patient relationship for improving their correct understanding on the disease and increasing the coping compliance, thus improve the QoL of patients (van der Meulen et al., 2021; Worrell et al., 2021; Wu et al., 2021). It is noteworthy that status and specific influencing factors on coping strategies and QoL of each type of pituitary tumour patients remain unclear, which warrant further research.

Clinically most microadenomas patients may only have endocrine manifestations, but rarely visual disturbance (Marko et al., 2013; Teng et al., 2015); therefore, patients tend to have a positive

response to the disease with urgency to seek for treatment. Most pituitary tumours grow slowly, and the patients appears to have slow yet repeated headache, decreased visual acuity, visual field defect, which are easy to be mistakenly diagnosed with hypopituitarism (Jang et al., 2020; Zhang et al., 2020). Long-term oppression on the optic nerve and pituitary tissue from tumours can cause irreversible damage (Santos et al., 2009). Thus, macroadenoma patients with severe clinical symptoms, may have a higher resigned scores. In clinical work, more attention should be put on macroadenoma patients, especially for those who get negative response to the disease, the medical staff should recognize the negative impacting factors on the patient's responses, give them earlier psychological intervention and necessary self-management training (Pertichetti et al., 2020; Tiemensma et al., 2011). At the same time, by appealing to the community and family members, we may encourage them to give these patients more emotional understanding, support and care for alleviating the negative psychological reactions in patients, prompting the patient to use the correct positive coping methods to improve the QoL of patients (Andela et al., 2019; Webb, 2011).

There are several limitations in this study must be considered. Firstly, the use of a cross-study design and the lack of a control group is a problem, our study could only examine patients' coping strategies at a particular point in time. Secondly, there might be some study object bias in our study, the most distressed subjects appeared to more likely to participate, which is known as the concept of symptomatic volunteers; however, it might also be possible that patients who feel worse are less likely to participate. Thirdly, the coping strategies is a relatively subjective measurement, some objective measurements were lacked in our study.

5 | CONCLUSION

Patients with pituitary tumour tend to adopt confrontation coping, avoidant coping and resigned coping, resort to less effective coping style, which are intimately associated with the type and size of pituitary tumour, education level, family income. Accordingly, the

QoL for this population tend to be rather low; therefore, more attention and instruction on the coping strategies are needed for the improvement of QoL in this population. The medical staff and family members should give more support and assistance to the patients with pituitary tumour, with the help of strengthening the coping strategies and coping skills training to patients with pituitary tumours, we may encourage and guide the patient to use the correct active coping strategies, avoid or reduce negative coping and thus improve the QoL.

AUTHOR CONTRIBUTIONS

CW and ZW designed research; CW, LX, HZ, YM and ZW conducted research; CW, LX and YM analysed data; CW and LX wrote the first draft of manuscript; ZW had primary responsibility for final content. All authors read and approved the final manuscript.

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None.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

All data generated or analysed during this study are included in this published article.

ETHICAL APPROVAL

In this study, all methods were performed in accordance with the relevant guidelines and regulations. This study protocol was reviewed and approved by the Research Ethics Committee of First Affiliated Hospital of Soochow University (No. 2013775175).

CONSENT TO PARTICIPATE

Participants were explicitly informed that the data collected in this survey would be confidential, and used only for academic research purpose, and written informed consent was obtained from all participants.

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