

Symptom Experience of Cancer-related Cognitive Impairment in Women with Ovarian Cancer

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Research Article

Keywords: Cognition, Cognitive impairment, Ovarian Cancer, Symptom experience, Quantitative research

Posted Date: March 8th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1331172/v1>

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Abstract

Purpose: To explore ovarian cancer survivors' symptom experience of cancer-related cognitive impairment (CRCI).

Methods: Semi-structured interviews were conducted with eligible ovarian cancer patients in Cancer Center of Fudan University, Shanghai, China. This study was guided by symptom management theory. Qualitative content analysis and thematic framework analysis were used to refine themes.

Results: The average age of participants (n=34) was 51.38 years [range 25-65 years] and median time since diagnosis was one year [range 0.2-42.8 years]. Three themes and nine subthemes were identified from the research. For perception of cognitive changes: Become stupid, not as smart as before; not noticing/ having the chance to notice any cognitive change. Possible influence events in the evaluation of CRCI: comfortable, monotonous, isolation and narrow-focused life cause the brain to "retire"; surgical anesthesia, chemotherapy as well as fatigue, sleep disorders and anxiety were also blamed for the change. For the impact of CRCI in the evaluation of cognitive changes: it was not an issue for most participants and they didn't particularly care, only a few said that their self-confidence was affected a little. For responses to cognitive decline: Trying not burden brain, actively or passively let themselves "slow down" or "offload" things. Personalized and repeated "note", "check" and "confirm" measures to prevent mistakes

Conclusion: The majority of ovarian cancer patients experienced symptoms of CRCI, highlighted by memory and attention problems, however most patients stated that cognitive symptoms didn't affect their lives. Sociocultural and cancer coping style played an important role in the CRCI symptom experience.

Introductions

Over the past 20 years, numerous studies have shown that non-central nervous system cancers and cancer-related treatments can lead to cognitive impairment, namely Cancer-related Cognitive Impairment (CRCI), with an incidence of 35–75%¹. CRCI is associated with impairments in memory, attention, language expression, executive function and processing speed, which seriously affect patients' daily life, interpersonal relationship, well-being, as well as participation in medical decision-making and treatment cooperation, during and after treatment². To harmonize increasing studies of cognitive function in patients with cancer, International Cognition and Cancer Task Force has published guidelines³. At present, relevant researches mainly focused on the breast cancer patients^{2,4}, limited attention has been paid to other cancer populations including ovarian cancer patients.

Ovarian cancer (OC) is one of the most common gynecological malignancies with a constantly increasing incidence over last 2 decades including China⁵. Compared to other non-central nervous system cancers, advanced stage of disease, extensive surgical resection, repeated high-dose chemotherapy

especially platinum drugs, high recurrence rate and other multiple related symptoms like menopausal symptoms, fatigue, anxiety, depression, sleep disorder .et al make OC survivors potentially experience higher risk of cognitive impairment^{4,6-8}. Limited and inconsistent previous studies showed that 28%-92% subjects with OC reported or were tested for cognitive impairment associated with their disease and treatment, significantly higher than the age and educational matched healthy women⁹⁻¹¹. CRCI in OC patients mainly performed reduced attention, memory, word finding and executive function, which negatively impacted their quality of life^{12,13}. However, in previous studies, in-depth description of the neurocognitive deficits experience in OC patients were lack.

Qualitative methods were utilized by several researchers mostly in breast cancer patients, to deeply explore CRCI complaints or specific contexts such as work performance, symptom impacts on the patients' life, patients' own strategies and supportive care needs for symptom management¹⁴⁻¹⁶. As Pergolizzi emphasized that simply asking the patient about their perceived cognitive changes might be stepping stone to finding non-pharmacological ways to address cognitive impairment¹⁴. The aims of the present study were to explore and describe CRCI symptom experience of OC patients using phenomenological analysis method of qualitative research.

Methods

Study design and subjects

This study adopted the Qualitative Description framework¹⁷, involving semi-structured interviews with participants. The research was guided by symptom management theory, in which a symptom includes perception, evaluation and response¹⁸. Symptom perception refers to whether an individual notices any sensory and behavioral differences from normal. Symptom evaluation means an individual's evaluation of the cause, location, severity, frequency, the risk and treatability of the symptoms, and the impact on their lives. Responses to symptom include physiological, psychological, social cultural, and behavioral components. The three dimensions are interrelated and affect each other, and can be repeated or occur simultaneously^{18,19}.

All participants were recruited from the Gynecological oncology clinic and Outpatient Chemotherapy Center in Fudan University of Cancer Center, Shanghai, China, between March and July 2021. Ethics approval was obtained from the center's ethics committee (Approval number 2103232-25). Purposive sampling was employed. Inclusion criteria were aged between 18 to 65 years old; with a primary diagnosis of OC in stable condition; and with normal communication ability in Mandarin. Exclusion criteria included brain metastases; potential psychiatric disorders; previous severe cognitive disorders. Qualitative sample size was based on the principle of data saturation.

Data collection

One of the researchers accessed the potential patients. If the person was interested, she would be invited to sign a written consent form and fill a short questionnaire about participates' demographic, disease and treatment information in a quiet and private room. This was followed by one-to-one, face-to-face semi-structured interviews lasting approximately 30–45 minutes, recorded by a digital recorder. The interview guide comprised of some open-ended questions, developed from literature reviews on key themes, reviewed by all authors and discussed at a multidisciplinary advisory group meeting, see Table 1. Data collection was concurrent with data analysis, interview questions might change a little as the study progressed.

Table 1

Interview guide

- (1) Tell us about any experience of cognitive difficulties, for example, being forgetful, being difficulty of concentration, unable to find right word to express yourself, feeling hard to complete a task?
- (2) When did you feel this change?
- (3) What kind of events do you think might contribute to these changes?
- (4) How did these cognitive changes affect your daily life or work or treatment or social relationship
- (5) What kind of strategies do you use to cope with this problem?

Data analysis

Interviews were transcribed verbatim from the audio recordings within 24 hours after the interview. Qualitative content analysis¹⁹ and thematic framework analysis²¹ were used to prepare, organize and report the data. A five-step content analysis was conducted by two researchers independently, as described in table 2. In the event of any disagreement with the interpretation of clusters or categories, a third research member was involved in the discussion process to establish a consensus.

Table 2

Content analysis process

- (1) Transcription: repeatedly listen to the recording, read interview notes and transcripts, extract and marked significant statements with important meanings.
- (2) Coding: Coding the recurring views.
- (3) Category analysis: categorize the coded opinions, and analyze the content in the way of categorization.
- (4) Description: write detailed and exhaustive description, sublimate the theme, and return to the interviewees for verification.
- (5) Organization: organize the data into meaningful explanations of phenomena.

Results

In this study, data saturation was achieved with thirty-four participants, ranging in age from 25 to 65 years with a mean age of 51 years old. The median time since diagnosis was one year (range 0.2-42.8 years), table 3 summarized the participant characteristics.

Table 3

Characteristics of the Participants (N=34)

Characteristics		N (%)
Educational level	Middle school or below	17(50.0)
	High school	4(11.8)
	University or above	13(38.2)
Employment status	Employed full time	5(14.7)
	Employed but on medical leave	5(14.7)
	Retired	18(43.0)
	Unemployed or homemaker	6(17.7)
Medical insurance	National medical insurance	26(70.6)
	Rural cooperative medical insurance	7(20.6)
	National medical insurance+ commercial insurance	1(2.9)
Living status	With family	28(82.4)
	Alone	6(17.6)
Religion belief	None	26(76.5)
	Buddhism	6(17.6)
	Christianity	2(5.9)
Marital status	Married	26(76.5)
	Unmarried	4(11.8)
	Widowed	1(2.9)
	Separated	1(2.9)
	Divorced	2(5.9)
Disease stage 3 or 4		26(76.5)
Recurrence	Yes	20(58.9)
	No	10(29.4)
Previous treatment	Surgery+chemotherapy	20(58.8)
	Surgery+chemotherapy+targeted therapy	11(32.3)
	Chemotherapy+ Targeted therapy	2(5.9)
	Chemotherapy	1(2.9)
Current treatment status	Chemotherapy	11(32.3)

Targeted therapy	3(8.82)
Regular follow-up	12(35.3)
Chemotherapy+ Targeted therapy	8(23.5)

The perception of cognitive changes

Become stupid, not as smart as before

Most of participants described that they had experienced some kind of cognitive impairment. Forgetfulness was the most prominent problem, including both short and long-term memory, especially after an interruption. "Being forgetful" "I could not find things" "I was unable to remember the words/names..." were their most frequent complaints. Case 2: "After the surgery, my memory was significantly not as good as before. Once, I got lost on the way to the hospital, I was very familiar with the route, but I couldn't remember how to change the transportation." Case 21: "I often forgot what I came into the room for, I had to stand there and think about it for a moment. Also, it was difficult for me to remember what others had said, feeling like my mind was completely blank at once. Forgetting to close the door, turn off the gas, and unplug the socket can also happen". However, a few patients like Case 20 emphasized that they could remember the things that they really cared about, even for the details, for example what the doctor said about the surgery or when the diagnosis was made.

In addition, some women acknowledged that their ability to comprehension, concentration and language expression had reduced a little, especially when learning new things or having social conversation. Case 22: "In conversations with colleagues who came to visit me, I usually couldn't express myself very organized and quickly if we talk about work matters." Case 21: "When tutoring my daughter, I have to use the mobile to do the even very simple calculation, which never happened before."

Not noticing/ having the chance to notice any cognition change

Nine respondents said they did not feel any cognitive decline, but some of them stressed that it might be because they did not have the chance to have this feeling, due to their current comfortable life or working situation. In other word, their daily affairs were completely within their current ability, or even lower than their ability requirements. Case 4: "Now, my only life goal is to take care of myself. What I need to do is to sleep, eat and have light walk after dinner. Sometimes I play mahjong or do other easy recreational activities. So, I do not have the chance to feel the change".

Symptom evaluation

Possible influence events of cognitive decline

Comfortable, monotonous, isolation and narrow-focused life cause the brain to "retire"

Most of the patients said that their life or work state were relatively comfortable, monotonous and closed, and their most focus was on treatment or recovery. They were well cared for or protected by family, friends or colleagues, and had little connection with outside. Therefore, it was unnecessary for them to remember/think/talk/concentrate as much as before. "Use it or lose it", in the long run, their brains would deteriorate. Case 19 and Case 5: Generally, I mainly stay at home and take care of my grandchildren with my husband. Case 6 and Case 22: Since my illness, I have been living a three-line (hospital-home-park) life with little communicate with outside. My focus is also very narrow, mainly on treatment. Slowly, the brain would become more and more sluggish"

Surgical anesthesia and chemotherapy were blamed for the change

Eight patients speculated that their "not so smart" might be related to the use of anesthetics and chemotherapy, especially those who had undergone multiple operations. Case 16: I don't know what the exact reason is, but I've heard people say that if you use too much anesthesia, you're going to be stupid, and I've had 3 surgeries. Chemotherapy and targeted therapy may also affect me.

Fatigue, sleep disorders and anxiety were also considered to affect cognition

A few patients expressed that fatigue, anxiety or poor asleep related to treatment might contribute to their experience. Case 14: "I haven't been sleeping well since chemo, and I think it had a big impact on my cognition. I didn't take sleeping pills as prescribed by my doctor because I was worried about side effects. Plus, I'm too young for a cancer diagnosis, and I am anxious about the treatment and prognosis, and I wish to have fertility preservation surgery."

The impact of cognitive changes

It was not an issue for me and I didn't particularly care

Due to their own values as well as their comfortable life, most patients clearly expressed that the slight decline of their memory or comprehension ability basically did not affect their life or work, and the

symptom did not bother them at all. Case 8: "I'm a teacher and I've gone back to work. Although my state is not very good, my workload and pressure are not very high, now, I can handle the current work, and I'm very satisfied with the present state. So, the cognitive decline doesn't affect me at all." Case 16 also described: "I went back to work after I finished my first cycle of chemo. My boss takes special care of me, I used to be a workaholic, but my job is much easier now."

Self-confidence was affected a little

A few patients especially those who had some particular experiences, such as forgetting to turn off the gas, closing the door, or getting lost, were a little bothered by cognitive decline and worried that the condition would get worse and worse. Case 2 did not dare to go out alone after an experience of getting lost, including going to the hospital. Therefore, if the family member was not available, her PICC line would not get maintained on time. She was very worried if this cognitive problem would become more and more serious, and hoped that there was some way to alleviate it.

Responses to cognitive decline

Try not burden brain, actively or passively let themselves "slow down" or "offload" things

Most patients put themselves in the position of being cared for, slow down their life, avoid accomplishing multiple tasks at the same time, and actively seek help from family members, which has become a "natural" adaptation of their cognitive decline. Case 15: "I have plenty of time now, I can make adjust, give myself some time and slow down." Case 5: "I try not to drain my brain or make myself too tired, I enjoy being taken care of by my family." Case 8: "It doesn't matter. I am now retired and have nothing to do. In case anything dangerous happens, I won't leave the kitchen until I've finished everything." Turning a blind eye to many things become a habit for many patients.

Personalized and repeated "note", "check" and "confirm" measures to prevent mistakes

Mobile phone "memos", shopping lists, post-it notes, alarm clocks, or writing down important things in time etc. were the most common compensation strategies for many patients. In addition, in order to prevent mistake, some patients in daily life would repeatedly check or confirm, such as whether the door and gas were turned off, whether the keys were taken away.

Discussion

Summary of main results

This study identified three themes and nine sub-themes in terms of CRCI perception, evaluation and impact. Most respondents reported cognitive function changes after OC diagnosis, particularly in memory and attention. Comfortable, monotonous, isolation and narrow-focused life leading to brain "retirement" was considered to be a possible event for CRCI by many patients. Most participants didn't particularly care this mild cognitive decline nor being affected by it. In response to cognitive decline, many participants chose not to burden their brains, actively or passively let themselves "slow down" or "unload" burden.

Results in the context of published literature

The results of CRCI perception in the present research was similar with previous studies. Bolton et al. conducted semi-structured interviews on 50 breast cancer patients by telephone, and found that subject cognitive impairment was mainly manifested in difficulty remembering things and recalling previously known tasks, and inability to concentrate on a task²². According to a qualitative study of 31 Chinese patients with cervical cancer by Zeng et al., memory was one of the most common cognitive impairments²³. Slightly different from other studies, the subjects of this study didn't mention much about the decline in language, executive ability and processing speed. Henderson et al. showed that long-term survivors of breast cancer not only complained of memory loss, but also reported a decline in verbal and executive function²⁴. Also unlike many previous studies^{22,24}, most respondents in this study indicated that cognitive decline didn't affect their daily life, quality of life, self-perception and communication with others. Such differences may be related to differences in diagnosis, disease or treatment stage, and socio-cultural background of subjects among studies. In this study, OC patients ranged in age from 25 to 65 years and included both relapsed and newly diagnosed patients, both on treatment and regular follow-up. Secondly, according to Sociocultural Health Belief Model, culture plays an important role in shaping individuals' perceptions, attitudes and behaviors relating to various dimensions of health²⁵. Both OC diagnosis and cognitive decline will bring stigma because of the symbolic connotations and cultural metaphors^{26,27}. Due to Fearful of "losing face", lack of mental health knowledge and negative stereotyping, under Asian cultures, mental illness such as cognitive impairment²⁷ is often regarded as a shame, destined and associated with family or personal dishonor²⁵, which makes patient avoid admit their problems and seek help for their psychiatric needs²⁸. So, in our study, it is possible that even though the level of their cognitive function might have declined to the point that affect their daily lives, the patients might avoid to admit.

Cancer coping styles influenced by culture can also affect patients' symptom experience. This study showed that after the diagnosis of OC, patients experienced a rapid decline in family role and social functions actively or passively. A study by Karen et al. showed that in Asian culture, cancer patients and their partners were more likely to adopt protective coping strategies, such as the spouse taking on the

patient's initial domestic roles (cooking, housework, shopping, etc.)²⁹. Besides, for patients in the study, rebalancing, creating new priorities and perspectives, changing personal life values and family roles (from caregivers to cared-for) were the main ways to reconcile cancer, consistent with the study of Le Boutillier et al³⁰. For some patients who had return to work, adjusting job roles—reduction in tasks and working hours, lowering work expectations and accepting care from colleagues, were main coping strategies, which were similar to the findings of Zomkowski et al¹⁶.

This kind of cancer copying way played a very important role in the perception, evaluation and response of CRCl. As a care recipient, some patients didn't have the chance to feel cognitive change and most of them didn't see CRCl as a problem for them, because they mostly just did what they could. Five patients who had returned to work in this study felt the same way and even reported that job gave them a sense of fulfillment and improved their quality of life, which is consistent with the findings of the systematic evaluation conducted by Stone et al³⁴. "Since I can't remember the doctor words, let the family do it" "I don't think too much now, just go with the flow" were the voices of most patients to copy with cognitive decline. As shown in Zeng et al.'s study, most of Chinese cervical cancer patient's response to cognitive impairment were "doing nothing", which was a reflection of Chinese Taoist philosophy²³, asserting that the natural order of the universe is one of functional harmony³³.

Mos patients expressed that their communication with outside decreased a lot, especially during the COVID-19 disease pandemic³¹. Loneliness might develop during the process, which might increase memory and concentration problems due to an underlying inflammatory response³². In addition, for the possible cause events of CRCl, besides fatigue, anxiety and depression, and sleep disorders which had been explored deeply in previous studies², the use of anesthetics in surgery was the most mentioned by the women in this study, especially for those who had undergone multiple surgeries. The idea that "anesthetics can harm your brain" was widespread among patients, and the information might come from peers or healthcare providers. The correlation between the number of surgeries and the degree of CRCl, and the persistence of postoperative cognitive dysfunction (POCD) can be further explored in future.

Strengths and weaknesses of the study

This study deeply explored symptom experience of CRCl in patients with OC in perception, evaluation and response of symptoms, which made up for the shortcomings of previous relevant studies. The study was a single center study, and the patients willing to participate in this study might be more optimistic, and had better treatment satisfaction, which might influence their symptom expression. And half of the participants in the study were within one year since the diagnosis, they were more likely to withdraw from society to cope with cancer³⁵, which directly affect symptom experience.

Implications for practice and future research

The majority of OC patients complained of memory and attention problems, which should be fully considered when implementing patient education. Patient education should be carried out repeatedly, in various forms and in a step-by-step manner. Individualized cognition compensatory strategies can be provided to OC patients, including personalized reminders, doing one thing at a time, asking others to minimize the number of interruptions during communication or working, slowing life pace and receiving others help. In the management of CRCI, sociocultural factors, cancer coping style, surgical history and other cancer-related symptoms such as fatigue, anxiety need to be considered. In the future, for precise symptom management, quantitative and multicenter research, objective evaluation methods such as neuropsychology can be carried out to further confirm the reliability of this study.

Conclusion

The majority of ovarian cancer patients experienced symptoms of CRCI, highlighted by memory and attention problems, however most patients stated that CRCI didn't affect their lives. Sociocultural, cancer coping style and other symptoms played an important role in the symptom perception, evaluation and response of CRCI.

Declarations

Acknowledgments

This research was supported by Shanghai Anticancer Association ChuYing Grant (SACA-CY20C08). The authors gratefully acknowledge the participants in this study.

Funding

This work was supported by Shanghai Anti-cancer Association (Grant numbers SACA-CY20C08).

Conflicts of interest

The authors have no relevant financial or non-financial interests to disclose.

Authors' Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Liying Wang, Yan Ding. The first draft of the manuscript was written by Liying Wang and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics approval

Approval for this study was granted by the Ethics Committee of Fudan University of Cancer Center (No 2103232-25).

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Consent for publication

The authors affirm that human research participants provided informed consent for publication

References

1. Ahles TA, Root JC, Ryan EL: Cancer- and cancer treatment-associated cognitive change: An update on the state of the science. *J CLIN ONCOL* 2012;30:3675-3686.
2. Lv L, Mao S, Dong H, Hu P, Dong R: Pathogenesis, assessments, and management of Chemotherapy-Related cognitive impairment (CRCI): An updated literature review. *J ONCOL* 2020;2020:3942439.
3. Wefel JS, Vardy J, Ahles T, Schagen SB: International Cognition and Cancer Task Force recommendations to harmonise studies of cognitive function in patients with cancer. *LANCET ONCOL* 2011;12:703-708.
4. Ahles TA, Hurria A: New Challenges in Psycho-Oncology Research IV: Cognition and cancer: Conceptual and methodological issues and future directions. *Psychooncology* 2018;27:3-9.
5. Jiang X, Tang H, Chen T: Epidemiology of gynecologic cancers in China. *J GYNECOL ONCOL* 2018;29:e7.
6. Lokich E: Gynecologic cancer survivorship. *Obstet Gynecol Clin North Am* 2019;46:165-178.
7. Georgakis MK, Beskou-Kontou T, Theodoridis I, Skalkidou A, Petridou ET: Surgical menopause in association with cognitive function and risk of dementia: A systematic review and meta-analysis. *PSYCHONEUROENDOCRINO* 2019;106:9-19.

8. Kumar S, Long J, Kehoe S, Sundar S, Cummins C: Quality of life outcomes following surgery for advanced ovarian cancer: A systematic review and meta-analysis. *INT J GYNECOL CANCER* 2019;29:1285-1291.
9. Hess LM, Chambers SK, Hatch K, Hallum A, Janicek MF, Buscema J, Borst M, Johnson C, Slayton L, Chongpison Y, Alberts DS: Pilot study of the prospective identification of changes in cognitive function during chemotherapy treatment for advanced ovarian cancer. *J Support Oncol* 2010;8:252-258.
10. Correa DD, Zhou Q, Thaler HT, Maziarz M, Hurley K, Hensley ML: Cognitive functions in long-term survivors of ovarian cancer. *GYNECOL ONCOL* 2010;119:366-369.
11. Zhang Y , Luo TZ, Lin YS, An CY, Zeng XG. Neuropsychological Study of Cancer-related Cognitive Impairment in Women with Gynecological Cancer. *Journal of Nursing* 2019;26:70-75.(In Chinese)
12. Correa DD, Zhou Q, Thaler HT, Maziarz M, Hurley K, Hensley ML: Cognitive functions in long-term survivors of ovarian cancer. *GYNECOL ONCOL* 2010;119:366-369.
13. Hess LM, Chambers SK, Hatch K, Hallum A, Janicek MF, Buscema J, Borst M, Johnson C, Slayton L, Chongpison Y, Alberts DS: Pilot study of the prospective identification of changes in cognitive function during chemotherapy treatment for advanced ovarian cancer. *J Support Oncol* 2010;8:252-258.
14. Pergolizzi D, Crespo I: Recognition of cognitive complaints for patients with advanced cancer. *SUPPORT CARE CANCER* 2020;28:5055-5057.
15. Green HJ, Mihuta ME, Ownsworth T, Dhillon HM, Tefay M, Sanmugarajah J, Tuffaha HW, Ng SK, Shum D: Adaptations to cognitive problems reported by breast cancer survivors seeking cognitive rehabilitation: A qualitative study. *Psychooncology* 2019;28:2042-2048.
16. Zomkowski K, Cruz DSB, Moreira GM, Volkmer C, Da SHG, Moraes SG, Flores SF: Qualitative study of return to work following breast cancer treatment. *Occup Med (Lond)* 2019;69:189-194.
17. Lopez KA, Willis DG: Descriptive versus interpretive phenomenology: Their contributions to nursing knowledge. *QUAL HEALTH RES* 2004;14:726-735.
18. Mathew A, Doorenbos AZ, Vincent C: Symptom management theory: Analysis, evaluation, and implications for caring for adults with cancer. *ANS Adv Nurs Sci* 2021;44:E93-E112.
19. Dodd M, Janson S, Facione N, Faucett J, Froelicher ES, Humphreys J, Lee K, Miaskowski C, Puntillo K, Rankin S, Taylor D: Advancing the science of symptom management. *J ADV NURS* 2001;33:668-676.
20. Elo S, Kyngas H: The qualitative content analysis process. *J ADV NURS* 2008;62:107-115.
21. Kiger ME, Varpio L: Thematic analysis of qualitative data: AMEE Guide No. 131. *MED TEACH* 2020;42:846-854.
22. Bolton G, Isaacs A: Women's experiences of cancer-related cognitive impairment, its impact on daily life and care received for it following treatment for breast cancer. *PSYCHOL HEALTH MED* 2018;23:1261-1274.

23. Zeng Y, Cheng AS, Liu X, Chan CC: Title: Cervical cancer survivors' perceived cognitive complaints and supportive care needs in mainland China: A qualitative study. *BMJ OPEN* 2017;7:e14078.
24. Henderson FM, Cross AJ, Baraniak AR: 'A new normal with chemobrain': Experiences of the impact of chemotherapy-related cognitive deficits in long-term breast cancer survivors. *Health Psychol Open* 2019;6:276598102.
25. Liang J, Jang Y, Aranda MP: Stigmatising beliefs about Alzheimer's disease: Findings from the Asian American Quality of Life Survey. *Health Soc Care Community* 2021;29:1483-1490.
26. Yang R, Yan R, Yuan F, Liu DL, Wang WM, Qu YX. The present situation of stigma and its influencing factors in ovarian cancer patients. *Journal of Nurses Training* 2020;35:2128-2132. (In Chinese)
27. Zhang Y: Negotiating a sociophysical space for elders with dementia in Shanghai. *Dementia (London)* 2021:443132579.
28. Woo BK: Family history and its relationship with dementia stigma beliefs among Chinese Americans. *GERIATR GERONTOL INT* 2017;17:122-125.
29. Kayser K, Cheung PK, Rao N, Chan YC, Chan Y, Lo PH: The influence of culture on couples coping with breast cancer: A comparative analysis of couples from China, India, and the United States. *J PSYCHOSOC ONCOL* 2014;32:264-288.
30. Le Boutillier C, Archer S, Barry C, King A, Mansfield L, Urch C: Conceptual framework for living with and beyond cancer: A systematic review and narrative synthesis. *Psychooncology* 2019;28:948-959.
31. Saltzman LY, Hansel TC, Bordnick PS: Loneliness, isolation, and social support factors in post-COVID-19 mental health. *Psychol Trauma* 2020;12:S55-S57.
32. Jaremka LM, Peng J, Bornstein R, Alfano CM, Andridge RR, Povoski SP, Lipari AM, Agnese DM, Farrar WB, Yee LD, Carson WR, Kiecolt-Glaser JK: Cognitive problems among breast cancer survivors: Loneliness enhances risk. *Psychooncology* 2014;23:1356-1364.
33. Chang DF, Ng N, Chen T, Hung T, Miao IY, Cao Y, Zhang Y: Let nature take its course: Cultural adaptation and pilot test of taoist cognitive therapy for chinese american immigrants with generalized anxiety disorder. *FRONT PSYCHOL* 2020;11:547852.
34. Brennan J: Adjustment to cancer - coping or personal transition? *Psychooncology* 2001;10:1-18.