

*Review Article*

## Determining the Correlates of Quality of Life (QoL) in the Elderly with Chemotherapy-Induced Neuropathy in Cancer Patients: a Multimodal Systematic Review

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### ABSTRACT

**Introduction:** Since neuropathy caused by chemotherapy is associated with a very high prevalence in the elderly and this issue can have adverse effects on the QoL of these people, and considering that there are different results regarding the extent of the effects of neuropathy caused by chemotherapy There is an effect on the QoL of the elderly. In this multifaceted systematic review, we decided to obtain the relationship between the QoL in the elderly with neuropathy caused by chemotherapy in cancer patients and reach a final conclusion.

**Methodology:** The current study was a multifaceted systematic review; This study was conducted during the last quarter of 2022 in Tabriz University of Medical Sciences; All electronic databases that published articles related to cancer, QoL, neuropathy, chemotherapy and the elderly were searched for the purposes of this research.

**Results:** The QoL of the elderly had a statistically significant relationship with gender and co-morbidities, so that the QoL score in men and also the elderly without co-morbidities was significantly higher than other elderly; Also, the average QoL in the elderly with a disease duration of less than one year was significantly higher than that of the elderly with a disease duration of more than 5 years.

**Conclusion:** This study showed that the QoL in a high percentage of elderly people with chemotherapy-induced neuropathy was favorable, which can be related to many factors. Considering that the highest percentage of the research units were young elderly people (age between 60 and 74 years old) and married people who have higher functional capacities and physical abilities than old or very old elderly people and probably benefit from more family and social support. They are far from the adverse psychological consequences that are reported in research for single and single elderly people.

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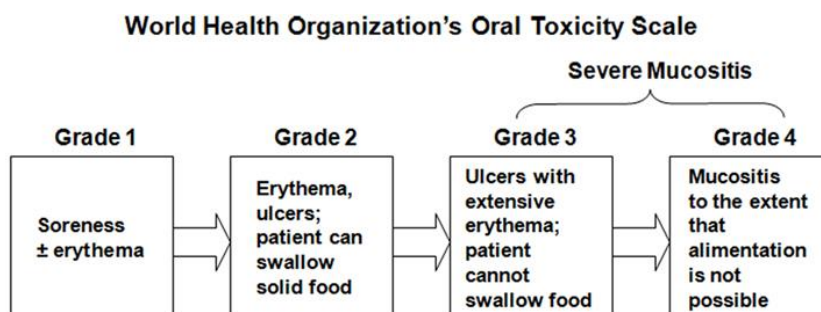
GRAPHICAL ABSTRACT



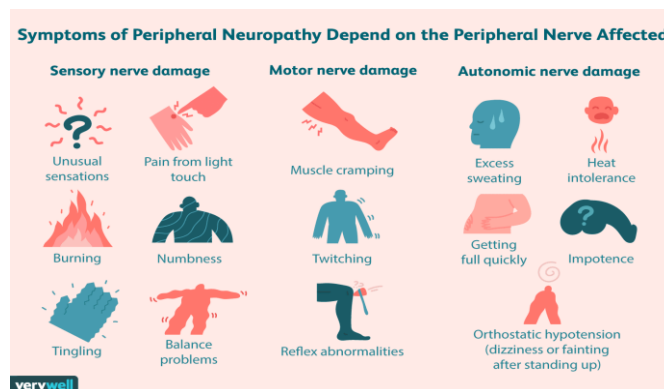
**Introduction**

In developing countries, old age is a period of life that begins at the age of 60. In the individual dimension, old age has a distinct biological feature associated with various complications such as changes in the face and body, hair color, and other physiological and vital organs. Since the average age of the population is increasing, the increase of some non-communicable diseases such as cancer is predictable [1-3]. The growing number of cancer patients globally and in our country, it has been raised as a health

problem at the global level and has made fighting it one of the health care priorities [4-6]. Nowadays, chemotherapy is one of the expanding treatment methods, which is used as a basic method for the treatment of various malignant disorders [7-9]. The side effects of cytotoxic chemotherapy are more common in the elderly with cancer than in young patients, and the occurrence of bone marrow suppression, mucositis (Figure 1), heart failure, peripheral neuropathy, and central neurotoxicity can complicate the treatment [10-13].



**Fig. 1. Mucositis**



**Fig. 2.** Peripheral neuropathy signs

Peripheral neuropathy (Figure 2) caused by chemotherapy is a peripheral nerve damage caused by exposure to chemotherapy drugs, which is one of the serious and important non-blood side effects of chemotherapy [14-16]. This complication occurs in 34 to 44 percent of patients undergoing chemotherapy, which in some cases is up to 74 percent. Mainly chemotherapy-induced neuropathy may cause limitations in daily functioning [17-19]. High prevalence and persistence of chemotherapy side effects, especially chemotherapy-induced peripheral neuropathy that affects the lower and upper limbs, they probably lead to a decrease in the QoL by disrupting physical, social, emotional, and functional well-being. These complications will have consequences for the personal and social life of the elderly, but it is a phenomenon that still needs more study and research [20-23]. Since neuropathy caused by chemotherapy in the elderly is associated with a very high prevalence and this issue can have adverse effects on the QoL of these people, and concerning that there are different results regarding the effects of neuropathy caused by chemotherapy on the QoL. The life of the elderly exists [24-26]. In this multifaceted systematic review, we decided to obtain the relationship between the QoL in the elderly with neuropathy caused by chemotherapy in cancer patients and reach a final conclusion [27-29].

### Methodology

The current study was a multifaceted systematic review and conducted during the last quarter of 2022 in Tabriz University of Medical Sciences. All electronic databases that published articles related to cancer, QoL, neuropathy, chemotherapy, and the elderly were searched for the purposes of this research. All people who met the conditions to enter the research participated in the research after fully explaining the objectives of the research and signing the written informed consent form. The entry criteria include being over 60 years old, being able to answer questions, and mastering the Persian language, at least one month has passed since the start of chemotherapy, not having diabetes, chronic kidney failure, Berger's disease, chronic liver failure, injury, bone fracture, vertebrae, AIDS, Lymes, shingles, Guillain Barre syndrome, systemic lupus erythematosus (one of the complications of which can be neuropathy), and not having cognitive impairment (getting a score of 7 and above on the AMT scale). The first part included questions such as age, sex, education, marital status, income adequacy, employment status, and the second part included questions related to the disease, such as the disease duration, concomitant diseases, and insurance. The short cognitive test questionnaire contains ten questions used to evaluate the cognitive status

of the elderly. This tool is one of the most widely used screening tests for the cognitive status of the elderly in the world. This tool has been validated in Iran and its psychometric properties ( $\alpha=0.905$ , sensitivity=0.99, and specificity = 0.805) have been reported.

The validity and reliability of this tool is acceptable and it has been recommended for use in the elderly population with a Cronbach's alpha of 0.77%. In Iran, Hossamzadeh *et al.* investigated the reliability of Lipad questionnaire in 2018. According to this research, the reliability of the said questionnaire using Cronbach's alpha gave a reliability coefficient of 0.83. Form and content validity have been used to determine the instrument's validity. Similarly, the reliability of the questionnaire was calculated using Cronbach's alpha, which had a Cronbach's alpha coefficient equal to 0.91.

### Results

The results of the independent t-test showed that the QoL of the elderly had a statistically significant relationship with gender and co-morbidities, so that the QoL score in men as well as the elderly without co-morbidities was significantly higher than other elderly people (Figure 3). The results of analysis of variance showed that income adequacy, employment status, and duration of illness had a statistically significant relationship with QoL. A two-by-two Tukey comparison showed that the QoL in the elderly with relatively sufficient income was significantly higher than that of the elderly with insufficient income, and the average score of the QoL obtained in the retired elderly was significantly higher than that of the unemployed and housebound elderly [30-32]. In addition, the average score obtained in working elderly people was significantly higher than that of housewives (Figure 4). A two-by-two Tukey comparison showed that the average QoL in elderly people with a disease duration of less

than one year was significantly higher than that of elderly people with a disease duration of more than 5 years (Figure 5).

### Discussion

It was not far from the expectation that their QoL, despite facing the crisis of cancer disease and the intervention of chemotherapy and neuropathy symptoms, was not overshadowed and was evaluated favorably [33-35]. A study conducted by Shin and Tien *et al.* in Taiwan on 68 colorectal cancer patients with and without peripheral neuropathy caused by chemotherapy, it showed that the QoL in the group with neuropathy is significantly lower [36-38]. The elderly were young, so that in Jordan and Chen's research, the young elderly had higher life satisfaction than the old elderly [39-41]. Similarly, in a study conducted by Long *et al.* in England on the elderly, they concluded that the young elderly has a better attitude towards old age and have a higher QoL than the old elderly [42]. It seems that high QoL score in the physical dimension is related to the age and functional independence of the research samples, most of whom were young elderly. In a study that was conducted by Bastani and Moghadam in Tehran Province and entitled: "the investigation of functional independence and factors related to it in the elderly", they concluded that there is an inverse relationship between age and functional independence [41-43].

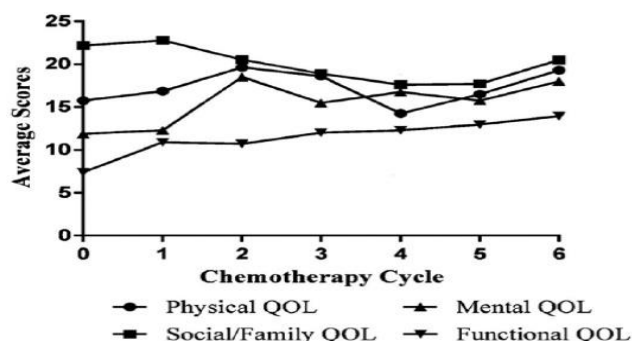
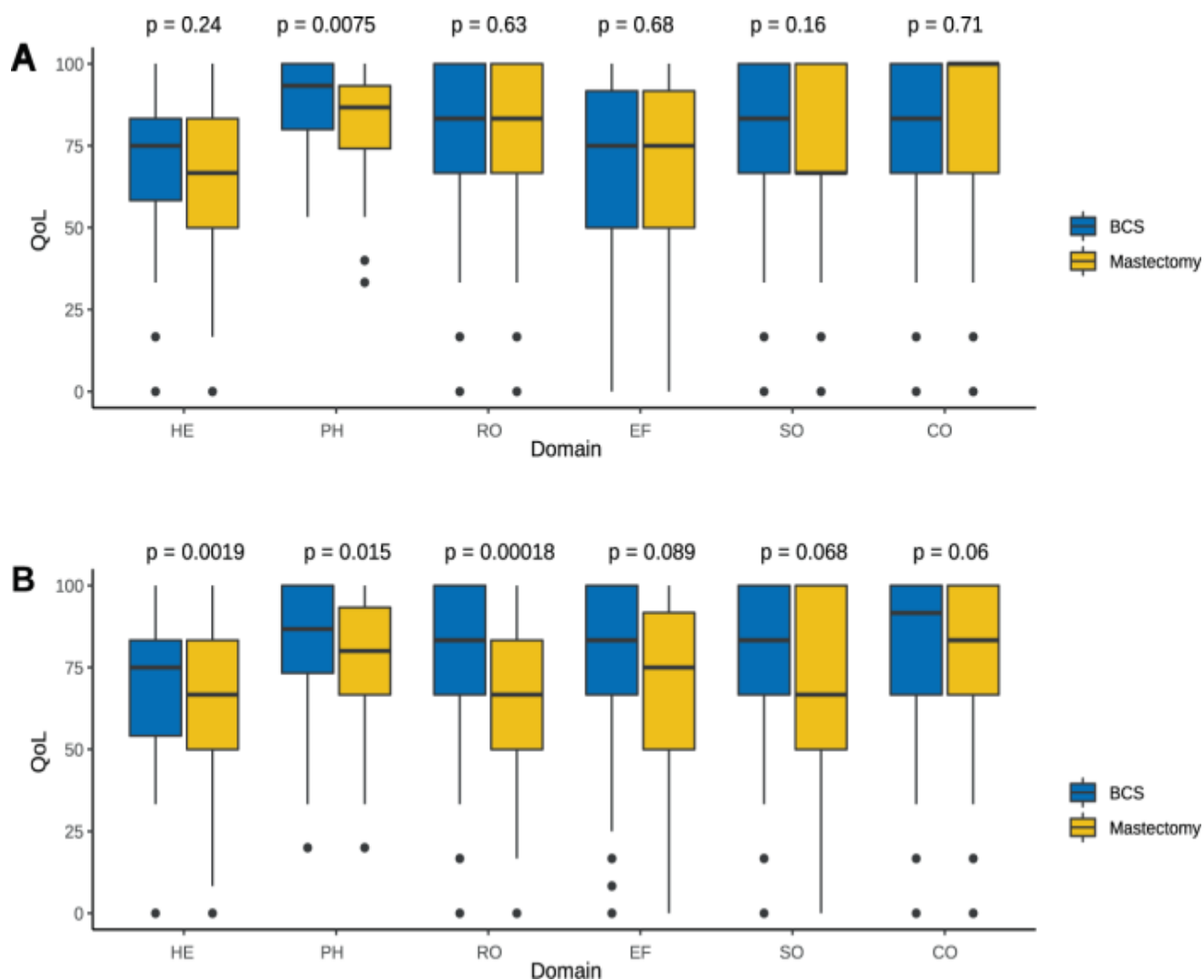


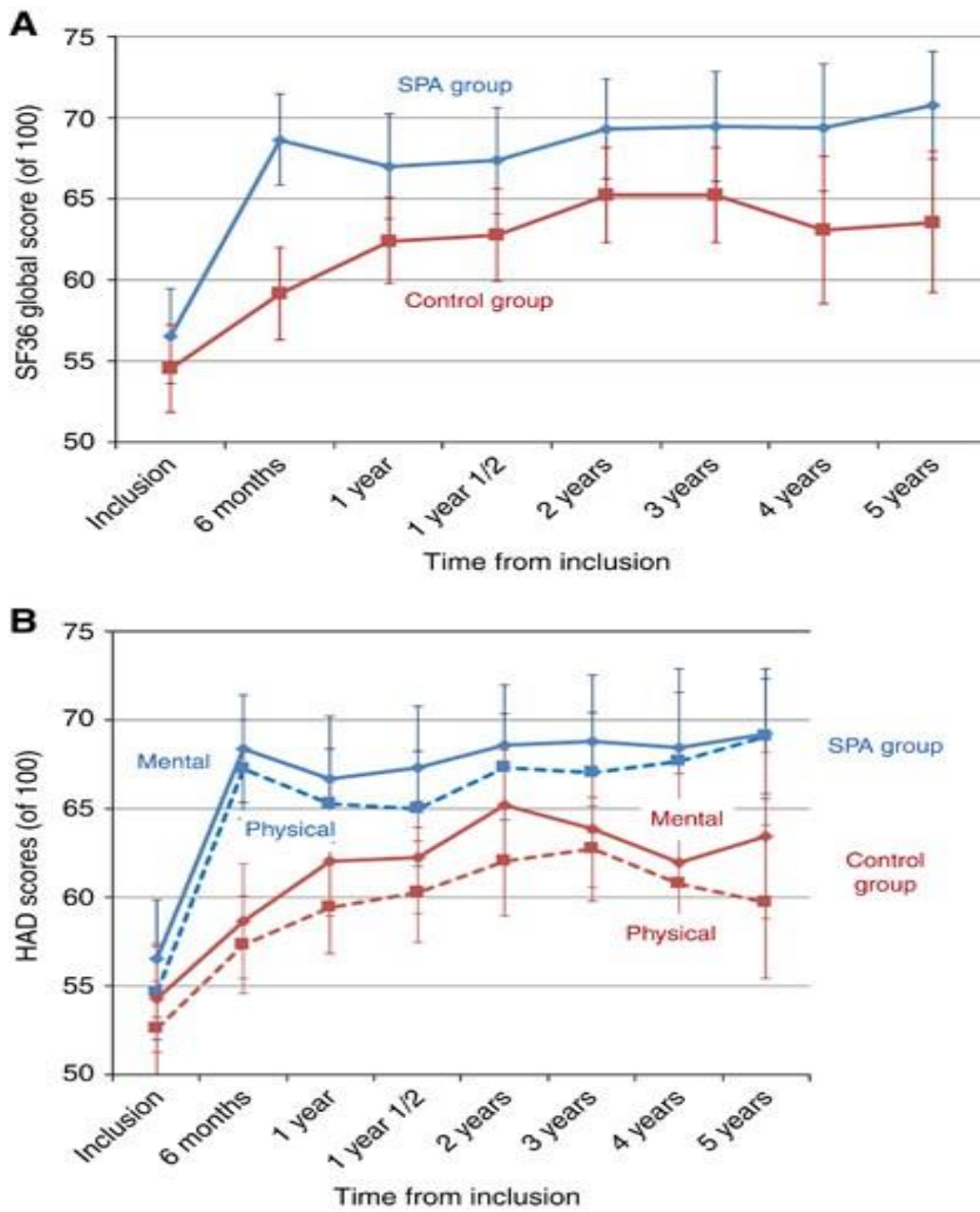
Fig. 3. QoL Score in participants



**Figure 4.** Changes in quality of life over time

Loss of functional independence in daily activities leads to a decrease in the QoL and dependence on others, which is also associated with high mortality. Regarding the dimension of self-care, the results show that QoL is favorable in this dimension. In the study of Koeh *et al.*, which was conducted in Malaysia, self-care behaviors were also reported to be the most important predictor of QoL [44]. It seems that

the high QoL in this dimension is related to the marriage of the research samples. According to the findings of the present study, 86.5% of the research samples were married [45]. The study of Abutalebi *et al.*, which was devoted to the self-care ability of heart failure patients, showed that married patients have higher self-care ability [46]. In relation to the dimension of anxiety and depression, the QoL of the studied elderly was favorable in this dimension.



**Figure 5.** Changes in quality of life in 5 years periods

It seems that the high QoL in this dimension is related to the disease duration of less than one year, and also not living in nursing homes, which allows better use of family support. This issue is in line with the results of the study by Heinrich and Galen, who showed in their study that the elderly who live with their families feel more satisfied due to the presence of richer social

networks and maintaining social connections compared to the elderly who live in nursing homes. The disease duration is less than one year in the anxiety and depression aspect of QoL. As Elias *et al.*'s study in Australia showed that loneliness, anxiety, and depression are common problems of elderly people in long-term care [47]. The sex of the patients should be checked before and during the treatment and the

necessary trainings to know about this disorder and solutions to improve the sexual function should be provided to the patients. In line with the dimension of social performance, the QoL of the elderly was expressed favorably. It seems that marriage, emotional support of the family, and living at home are the influencing factors on this dimension. In this regard, the results of Alipour *et al.*'s study showed that emotional support has the greatest impact on QoL. Pasha *et al.*'s study showed that elderly people living at home have more support. The results of the research of Haqitian and Mohajir also indicate that married elderly have more social support. In relation to the dimension of mental performance, the QoL in the research samples was obtained favorably. It seems that high QoL in the subjective dimension is related to social support, being a young elderly. In the dimension of life satisfaction, the QoL of the elderly was estimated as favorable. High QoL in this dimension may be related to marital status and social support. In a study conducted in the cities of Gorgan and Gonabad by Kochchi *et al.*, they reached the conclusion that increased loneliness can reduce the level of life satisfaction. They further stated that the family is the most important source of support and interpersonal relationships that can control anxiety and stress in the elderly by providing adequate support. The presence of people around you can make you feel satisfied with life by creating intimacy and security. The average score of the QoL in the elderly with disease duration of less than one year was significantly higher than that of the elderly with disease duration of more than 5 years. Due to the fact that caregivers support the sick elderly, the disease incidence is high in the early years. Therefore, this leads to an increase in the QoL in the elderly with cancer with a history of less than one year. In a study conducted by Samadian *et al.* in Kerman, they concluded that there is a positive and significant relationship between social support and the QoL

of the elderly. In this way, the more the elderly are supported in terms of financial, emotional, counseling, interviews, and services, the higher their QoL will be. Similarly, the results of this study on the relationship between the disease duration and the QoL with Holzner's study in Austria are consistent with the disease duration leads to a decrease in the QoL [8]. Employment status also had a statistically significant relationship with QoL, which was consistent with previous related studies. The research environment was limited and it is not a national design and based on the population, which makes it difficult to generalize the results. In addition to the cases mentioned in this study, a non-random sampling method was used, which may not generalize the results of this study to all patients with chemotherapy-induced neuropathy. Another limitation of this study is the tiredness of the studied elderly, which raises the possibility of lack of concentration, which could have an effect on the way the studied elderly answered. Lipad QoL questionnaire, which is specific to the elderly age group, was used to collect information, but the results of the present study may not be generalizable to all patients with chemotherapy-induced neuropathy in Iran.

## Conclusion

This study showed that the QoL in a high percentage of elderly people with neuropathy caused by chemotherapy was favorable, which can be related to many components. Concerning that the highest percentage of the research units were young elderly people (age between 60 and 74 years old) and married people who have higher functional capacities and physical abilities than old or very old elderly people and probably benefit from more family and social support. They are far from the adverse psychological consequences reported in research for single elderly people. Therefore, it

is suggested that this study be conducted in old and very old people (57 years old and above), without a spouse, and lonely people involved with the phenomenon of loneliness, and separate by gender. Given that peripheral neuropathy caused by chemotherapy has an undeniable role in the public health, satisfaction, and QoL of the elderly with this disorder, the data obtained from this research can be used in nursing education, clinical services, and management in the field of nursing.

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