# RESEARCH ARTICLE

# Effects of Home Nursing Intervention on the Quality of Life of Patients with Nasopharyngeal Carcinoma after Radiotherapy and Chemotherapy

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## Abstract

Background: The effects of home nursing intervention on the quality of life in patients with nasopharyngeal carcinoma (NPC) after radiotherapy and chemotherapy are unclear. According to the characteristics of nursing home patients with nasopharyngeal carcinoma, we should continuously improve the nursing plan and improve the quality of life of patients at home. Materials and Methods: We selected 180 patients at home with NPC after radiotherapy and chemotherapy. The patients were randomly divided into experimental and control groups (90 patients each). The experimental group featured intervention with an NPC home nursing plan, while the control group was given routine discharge and outpatient review. Nursing intervention for patients was mainly achieved by regular telephone follow-up and home visits. We use the quality of life scale (QOL-C30), anxiety scale (SAS) and depression scale (SDS) to evaluate these patients before intervention, and during follow-up at 1 month and 3 months after the intervention. Results: Overall health and quality of life were significantly different between the groups ($p<0.05$), Emotional function score was significantly higher after intervention ($p<0.05$), as were cognitive function and social function scores after 3 months of intervention ($p<0.05$). Scores of fatigue, nausea and vomiting, pain, appetite and constipation were also significantly different between the two groups ($p<0.05$). Rates of anxiety and depression after 3 months of intervention were 11.1%, 22.2% and 34.4%, 53.3%, the differences being significant ($p<0.05$). Conclusions: NPC home nursing plan could effectively improve overall quality of life, cognitive function, social function (after 3 months) of patients, but improvement regarding body function is not suggested. Fatigue, nausea and vomiting, pain, appetite, constipation were clearly improved. We should further pursue a personalized, comprehensive measurements for nursing interventions and try to improve the quality of life of NPC patients at home.

Keywords: Home nursing - intervention - NPC - radiotherapy and chemotherapy - quality of life - China

## Introduction

Nasopharyngeal carcinoma (NPC) is relatively common disease of head and neck malignant, it's clinical incidence is higher, because of the anatomical characteristics, the special biological behavior and sensitivity to the radiation, radiation therapy is the first choice and the main treatment method (Bei et al., 2010). With modern radiotherapy (RT) technology alone or in combination with chemotherapy, many NPC patients can be cured, even at advanced stages of the disease (Fang et al., 1999; Fang et al., 2001). Due to the long time of NPC radiotherapy cycles and the rehabilitation process, the patient can not in hospital for long time, and most cancer patients later in life spend at home for most of the time. In this period of time, patients still face many urgent problem that need to be handled, the coexistence of these

problems will lead to the poor home life quality in patients. Thus, the assessment of QOL for NPC home patients has become an important issue. The correct information on the variables correlated with QOL in NPC home patients may help healthcare planners identify which patients need more services, such as physical rehabilitation, social support, or psychological consultation. Therefore, we should study the factors that affected the quality of life in home patients with nasopharyngeal carcinoma (NPC) after treatment, make the home nursing plan, guide the nurses to carry out the home nursing , meet the demand of home patients during care, and improve patient's quality of life. That is a studying subject of worthy. I had begun to make the research since 2013. The relevant research is reported as follows:

We choose 180 cases of patients with nasopharyngeal carcinoma after the treatment of radiotherapy between

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January 2013 and December 2013 and chemotherapy. They were randomly divided into experimental group and control group, the experimental group were 90 cases (69 male, 21 female), whose age were from 21 to 75 years old (50.02±11.26 years old), the Control group were 90 cases (61 male, 29 female), whose age from 25 to 79 years old (51.46±10.96 years old), There were no significant differences between two groups patients with sex, age, culture level, disease stage and other general information (*P*>0.05) (see Table1).

## Materials and Methods

*Home nursing plan*

According to the home nursing needs of patients with (NPC), the specialized nurses made the home nursing plan for patients and applied it to make the patients get Comprehensive, accessible and continuous home care. The main content of home nursing plan were following: a) educational cognitive intervention. The measurements were mainly involved in general knowledge of NPC diagnosis and prevention, preventive and control methods of complications after treatment, the guide of correct and reasonable home diet. By the form of providing written materials, individual or regular home visits, we try to help the patient to correct wrong cognitive and bad behavior because of the treatment and teach them to master correct and effective skills when the patients meet a variety of problems because of diagnosis and treatment at home; b) psychological intervention. We should make timely nursing diagnosis of home negative emotions for NPC patients and try to help the patients to establish correct psychological defense mechanism by psychological allude, persuasion, inspired, reassurance. Meanwhile, we must pay attention to strive for the family and social support; c) therapeutic intervention. Although these symptoms such as dry mouth, dry throat pain, oral ulcer, dry nasal mucosa, stuffy nose, nasal secretions increase, and viscous, nose bleeding, radioactive skin reaction, etc were controlled or improved during hospital, but the patients also need continuous family nursing intervention. We should encourage them to make home nursing, functional exercise and recovery plan, such as the flush of the nasal cavity, the functional exercise of opening mouth and transferring neck, the rational drug use and so on, thus we can further reduce the adverse reaction because of treatment.

*Methods of investigation*

Cancer specialist nurses who were trained specially made the intervention measures and survey of the experimental group, they started telephone follow-up when the patients left hospital for 1 week, and then every two weeks continued to telephone them and implement the home nursing intervention. Our questionnaire mainly include: (1) the core of quality of life scale. This questionnaire (QOL-C30) was developed by the European organization for research and treatment of cancer, QOL-C30 scale has six indicators (physical function, cognitive function, role function, emotional function, social function, the overall evaluation) and 30 factors, self

overall evaluation has seven answer: very poor (1 points), poor (2 points), a little poor (3 points), general (4 points), a little good (5 points), good (6 points), very good (7 points), the other indicators have four answers: no (0), a little often (1 points), more often (2 points) often (3 points), among them the score of self overall evaluation is higher, the impact on the quality of life is smaller. The scores of the six functional indicators are higher the score, the impact on the quality of life is greater. (2) the self-evaluation of anxiety scale (SAS) : this table contains 20 items, each item has 4 grade scores and four answers: little or no (1 points), a little (2 points), sometimes (3 points), most of the time or all of the time (4 points), According to the China frequently touched as a result, the boundary value of the SAS was 50 points, the score of mild anxiety, Moderate anxiety and severe anxiety are 50 to 59 points, 60-69 points , more than 70 points respectively; (3) depression scale (SDS) : this table contains 20 items and has 4 grade scores. The upper limit of normal SDS total score is 41 points, the lower is the score, the better is the status. The standard score is the integral part of the total score that is multiplied by 1.25. More than 50 points of SDS standard score indicates depressive symptoms in our country, the score of mild depression is from 53 to 62 points, moderate depression is from 63 to 72 points and severe depression is more than 72 points. After explained in detail by nursing staff, all questionnaires were filled in by the patients itself, the three phases of investigation are: 1months (before intervention) after hospital, 2 months (after intervention) after hospital, 3 months (after intervention) after hospital.

*Statistical analysis*

The Statistical data were analyzed by SPSS13.0 software. The measurement data were analyzed by chi-square test and the counting data t test. *P*<0.05 represents significant differences with statistical significance.

## Results

*The general information of two groups of patients with NPC. The results are as follows. (see Table1 )*

The functional improvement of quality of life with patients before and after home nursing intervention: In the functional index score of NPC home patients, the scores of physical function had significant difference before and after the intervention (*p*<0.05), the comparison of the two groups had no significant difference (*p*>0.05); the scores of cognitive function in 3 months after intervention have significant difference with the scores of the other two stages (*p*<0.05) and also have significant difference with the control (*p*<0.05); the scores of emotional function and overall health of experimental group exists significant difference before and after the intervention, and also have a significant difference with the control groups (*p*<0.05); the scores of social function and the overall quality of life in experimental group exist significant difference before and after the intervention, and significant difference between the two groups in 3 months after intervention (*P*<0.05) (see Table2).

The symptom improvement of quality of life in patients before and after the home nursing intervention: Among

*Effects of Home Nursing Intervention on the QoL of Patients with Nasopharyngeal Carcinoma after Therapy*

**Table 1. The General Statistics of two Groups Patients**

| Characteristics /Groups | Experimental Group(N/ %) | Control Group(n/ %) |
|---|---|---|
| sex | | |
| male | 69(76.7%) | 61(67.8%) |
| femal | 21(23.3%) | 29(32.2%) |
| age(years) | 21-75(50.02±11.26) | 25-79(51.46±10.96) |
| cultural degree | | |
| primary school | 12(13.3%) | 18(20.1%) |
| middle school | 35(38.9%) | 31(34.4%) |
| high school | 21(23.2%) | 15(16.6%) |
| college | 16(17.8%) | 14(15.6%) |
| others | 16(17.8%) | 12(13.3%) |
| stage of cancer | | |
| I | 4(4.4%) | 2(2.1%) |
| II | 8(20.1%) | 10(11.2%) |
| III | 58(64.3%) | 67(74.4%) |
| IV | 10(11.2%) | 12(13.3%) |
| home self-care ability | good (100%) | good (100%) |

the symptom index of QOL-C30, the scores of fatigue, nausea and vomiting, pain, loss of appetite, constipation had significant difference before and after the intervention, and in addition to the fatigue scores, other symptom scores also exist significant difference with the control (*P*<0.05); the scores of shortness of breath, insomnia, diarrhea symptom had no significant difference before and after the intervention, and also had no significant difference with the control group (*P*>0.05) (see Table3)

Anxiety and depression with patients before and after home nursing intervention: The anxiety score of three stages in the two groups were 41.44, 37.81, 35.96 and 40.45, 36.36, 37.48, The anxiety score of three stages in the two groups were 51.40, 52.50, 42.75and 51.03, 50.40, 45.04, total norm score of anxiety and depression in 3 months after intervention exist significant difference with before intervention (*P*<0.05), the proportion of no anxiety (depression) and anxiety (depression) in two groups of

**Table 2. The functional and overall health indexes in QOL - C30 scale of two groups patients before and after the intervention (x̄±S)**

| Indexes/Groups | Experimental Group(N=90) | | | Control Group(n=90) | | |
|---|---|---|---|---|---|---|
| | before intervention | 1month | 3months | before intervention | 1month | 3months |
| physical function | 1.524±0.220 | 1.436±0.270△ | 1.416±0.172△ | 1.618±0.211 | 1.486±0.116 | 1.46±0.095 |
| cognitive function | 2.022±0.730* | 1.928±0.610 | 1.617±0.422△ | 2.017±0.671 | 1.844±0.447 | 1.883±0.416 |
| emotional function | 1.603±2.344* | 1.589±0.270△ | 1.497±0.206△ | 1.661±0.280 | 1.427±0.122 | 1.294±0.096 |
| social function | 1.444±0.328 | 1.344±0.228△ | 1.339±0.184△ | 1.456±0.346 | 1.244±0.164 | 1.133±0.094 |
| overall health | 4.467±0.903* | 4.622±1.024△ | 5.244±1.046△ | 4.289±1.120 | 4.911±0.600 | 5.067±0.535 |
| overall QOL | 4.389±1.027* | 4.544±0.947△ | 4.942±0.889△ | 4.344±1.172 | 4.956±0.537 | 4.744±0.681 |

*Represents the score comparison before and after the intervention, P < 0.05; △represents the score comparison between the two groups, P < 0.05

**Table 3. The symptom indexes comparison in QOL - C30 scale of two groups of patients before and after the intervention (x̄±S)**

| Symptom /Groups | Experimental Group(N=90) | | | Control Group(n=90) | | |
|---|---|---|---|---|---|---|
| | before intervention | 1month | 3months | before intervention | 1month | 3months |
| Fatigue | 1.919±0.468* | 1.681±0.321 | 1.648±0.210 | 1.860±0.344 | 1.804±0.344 | 1.715±0.306 |
| nausea and vomiting | 1.517±0.305* | 1.567±1.146△ | 1.522±0.243△ | 1.556±0.700 | 1.433±0.630 | 1.344±0.125 |
| pain | 1.683±0.428* | 1.683±0.372△ | 1.550 ±0.354△ | 1.827±0.389 | 1.417 ±0.237 | 1.408±0.213 |
| shortness of breath | 1.222±0.267 | 1.211±0.258 | 1.156±0.133 | 1.300±0.325 | 1.178±0.170 | 1.200±0.229 |
| insomnia | 1.578±0.606 | 1.511±0.477 | 1.556±0.541 | 1.627±0.692 | 1.389±0.433 | 1.488±0.244 |
| loss of appetite | 1.767±0.675* | 1.733±0.557△ | 1.644±0.501△ | 1.944±0.885 | 1.511±0.500 | 1.481±0.367 |
| constipation | 1.444±0.429* | 1.344±0.431△ | 1.306±0.282△ | 1.467±0.544 | 1.433±0.316 | 1.467±0.220 |
| diarrhea | 1.233±0.226 | 1.200±0.207 | 1.244±0.147 | 1.211±0.260 | 1.167±0.185 | 1.256±0.053 |

*represents the score comparison before and after the intervention, P < 0.05; △ represents the score comparison between the two groups, P<0.05

**Table 4. SAS Scale Index Score in two Groups of Patients before and After the Intervention**

| Stage/Groups | Experimental Group(N=90)/ Anxiety Occurrence(%) | | | | | Control Group(N=90)/ Anxiety Occurrence(%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | total standard score | no | mild | moderate | Severe | total standard score | no | mild | moderate | Severe |
| Before intervention | 41.44±50.52 | 69 (76.7%) | 16 (17.8%) | 4 (4.4%) | 1 (1.1%) | 40.45±29.29 | 73 (81.1%) | 13 (14.5%) | 3 (3.3%) | 1 (1.1%) |
| 1 months | 37.81±86.91 | 76 (84.5%) | 11 (12.2%) | 42 (2.2%) | 1 (1.1%) | 36.36±50.81 | 69 (76.7%) | 15 (16.7%) | 4 (4.4%) | 2 (2.2%) |
| 3 months | 35.96±103.13*△ | 80△ (88.9%) | 7△ (7.8%) | 2△ (2.2%) | 1 (1.1%) | 37.48±71.75 | 70 (77.8%) | 13 (14.4%) | 5 (5.5%) | 2 (2.2%) |

*represents the Proportion comparison before and after the intervention, P<0.05; △ represents the score comparison between the two groups, P<0.05

**Table 5. SDS Scale Index Score in two Groups of Patients before and after the Intervention**

| Stage/Groups | Experimental group (n=90)/depression occurrence(%) | | | | | Control group(n=90)/ depresson occurrence(%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | total standard score | no | mild | moderate | Severe | total standard score | no | mild | moderate | Severe |
| Before intervention | 51.40±44.87 | 41 (45.6%) | 39 (43.3%) | 8 (8.9%) | 2 (2.2%) | 51.03±51.09 | 49 (54.4%) | 35 (38.9%) | 5 (5.6%) | 1 (1.1%) |
| 1 months | 52.50±42.70 | 32 (35.6%) | 44 (48.9%) | 11 (12.2%) | 3 (3.3%) | 50.44±70.69 | 50 (55.6%) | 32 (35.6%) | 6 (6.6%) | 2 (2.2%) |
| 3 months | 35.96±103.13*△ | 59△ (65.6%) | 24△ (26.7%) | 6 (6.6%) | 1 (1.1%) | 45.04±63.64 | 42 (46.7%) | 38 (42.2%) | 8 (8.9%) | 2 (2.2%) |

*represents the Proportion comparison before and after the intervention, P < 0.05; △ represents the score comparison between the two groups, P < 0.05

before and after three months of the were 88.9% (11.1%), 88.9% (22.2%)and 65.6% (34.4%), 46.7% (53.3%). The occurrence exist significant differences between the two groups (*P*<0.05), the percentage of mild and moderate anxiety also exist significant differences (*P*< 0.05) (see Table4),the percentage of mild depression exist significant difference (*P*< 0.05) (see Table5).

## Discussion

Home nursing is an important stage in extended care services, it is a new development of high quality nursing service, it can consolidate the nursing effect effectively and improve the quality of life of the patient continuously, it played an important role in the rehabilitation of disease. There are many factors of influence in the quality of life of NPC home patients, in addition to the disease itself and the treatment of adverse reactions, also include social, psychological, cultural and economic factors, different factors can cause different home nursing care problems that exists individual differences obviously. At present, The nursing services provided for patients were confined to the hospitalization, patients with NPC is no exception, patients are in home care during treatment and rehabilitation, they also suffer from physical, psychological and social aspects of adverse factors of interference, some conditions can't be eliminated or reduced on its own power , they still need special personnel guidance of home nursing. Therefore, nursing staff should make timely judgments and give nursing intervention according to the possible question of the home NPC patients, constantly improve the effect of home care and the quality of life of the patients.

At present, we often provide nursing service for cancer when the during the patients are in hospital, patients with NPC is no exception, they are in the state of home rehabilitation at most of time, during this period the patients will suffer interference of physiological, psychological, social, and multiple adverse factors, some factors cannot rely on its own strength to be eliminated or reduced, still needed specialist nurses homecare and guidance. Therefore, nursing staff should be based on the potential problems of nursing care in patients with NPC, and timely make judgments and nursing intervention, improve the effect of home care and the quality of life of patients. Huguenin used the QOL-C30 scale to measure the QOL of head and neck cancer patients and found that dry mouth and being able to eat solid food were the most serious problems in NPC patients (Huguenin et al.,

1999). Hughes reported that NPC patients had subjective or objective swallowing problems. Results showed 76% patients had difficulty in swallowing, and 97% patients had dry mouth in the 56 months after therapy (Hughes PJ , et al., 2000) . The research of Guoping showed that 50% patients had memory deficit, 45.92% patients had hearing deficit, 35.71% patients had increased tooth decay, and 21.47% patients had difficulty in opening their mouth. As a result, radiotherapy had a major impact on the QOL of patients (Guoping et al., 2005). With the extension of time, these physical symptoms will have a certain effect on the quality of life of home patients. Therefore, we should give the NPC patients after radiotherapy more care, and focus on strengthening the prevention , controlling the symptoms with home care programs, such as how to protect the skin, to prevent skin infections by Biyafen, burn ointment and other drugs, to protect the nasal mucosa and reduce the nasal bleeding by nasal cavity irrigation, t guide patients with light salt water gargle, local ulcer with Wes grams of gold or indium peptide spray, keep the patient oral cavity cleaning before a meal with homemade procaine compound with vitamin B solution , to promote good eating, to prevent joint dysfunction by the exercise of open mouth and neck rotation, etc. We take these interventions to overcome or reduce the impact on the quality of life because of physical symptom distress. In our study, We found that the symptoms of fatigue, nausea and vomiting, pain, appetite, constipation after home nursing intervention were improved significantly (*P*<0.05), and with the time prolonging, the effect was obvious, but there were no significant difference between the shortness of breath, insomnia, diarrhea and other symptoms between the two groups and two group comparison (*P*>0.05), and the scores of these three symptoms were lower in all symptoms, it suggests that shortness of breath, insomnia and diarrhea symptoms may be not the main symptoms associated with home NPC patients, but there may be other reasons that lead to these three kinds of symptoms, although it is not a major factor affecting the quality of life of home NPC patients, We should not easily ignore these symptoms and take the home intervention timely.

NPC is a special type of head and neck malignant tumor, with a high degree of malignancy, Hong et al. (2015) Research shows that patients with NPC have obvious psychological reaction, especially anxiety and depression, The side effects of the treatment of nasopharyngeal carcinoma patients with synchronous radiotherapy and chemotherapy are more than single

treatment, and the duration is longer, if the nasopharyngeal carcinoma patients can not be got the psychological intervention, the negative emotions can not be eliminated, that is bound to affect the quality of life. the treatment of patients with NPC should be treated with a single treatment. In this study, we found that anxiety, depression occurred in patients with home NPC in a certain proportion, the incidence of anxiety of the control group in the three stages 18.9%, 23.3%, 22.2%, the incidence of depression was 45.6%, 44.4%, 53.3%, which will have a potential impact on the quality of life. The incidence of depression was significantly higher than that of anxiety, After we took the home care program, the anxiety and depression of the patients were improved to some degree. The interventional effect was not obvious at early time, especially with the improvement of emotional function, cognitive function and social function, the proportion of patient's anxiety and depression were improved obviously. The incidence of depression after improvement is still significantly higher than that of anxiety, which should cause the attention of our nurses, we should focus on strengthening the improvement of depression. Home care program is effective for mild to moderate anxiety and mild depression. It is not obvious to improve the effect of severe anxiety and moderate or severe depression. We may also use other measures, such as more professional psychological intervention, drug intervention and other means to further improve the effect.

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