

Designing and the Validation of the Evidence-Based Nursing Care Instruction in the Nausea and Vomiting of Patients Undergoing Chemotherapy

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Abstract

Introduction: Nausea and vomiting due to chemotherapy is the most common and severe complications in patients suffering from cancer. This study has been done with the aim of designing an evidence-based nursing care instruction for the nausea and vomiting of the patients suffering from chemotherapy.

Methods: This study is a development study method in the chemotherapy ward of the Baqiatallah (A.J) Hospital in 2014. Nausea and vomiting nursing care instruction was designed based on the Stetler Model with an evidence-based approach. The ideas of ten faculty members of the selected universities were considered for assessing the validity of the instruction content through the Delphi model. The applicability of the instruction was assessed through interviews with 8 relevant clinical experts. In addition to assessing nursing reference books, some articles were studied from some websites including: Google scholar, Elsevier, Cochran, Proquest, Pubmed and SID. The key words for searching these articles included: care instruction, evidence-based nursing, nausea, vomiting and protocol.

Findings: The evidence-based instruction of nausea and vomiting due to chemotherapy in this study included: nursing diagnosis, reasons, evaluation criteria and nursing interventions. These can be used as a clinical guide for taking care of the patients undergoing chemotherapy based on the most valid scientific texts with an evidence-based approach.

Conclusion: Designing an evidence-based nursing care instruction for patients undergoing chemotherapy leads to more benefits and increases the achievement of the nursing staff to up-to-date information and finally increases the nursing cares quality. In addition, a part of clinical nurses' need in facing nausea and vomiting in these patients will be met.

Key words: Instruction, Evidence-based Nursing Care, Chemotherapy, Nausea and Vomiting.

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Introduction

Cancer is a kind of disease that is diagnosed with uncontrolled cell growth, local tissue invasion and systemic metastasis [1]. An increase in the number of the people who are suffering from cancer is today's concern as a big health problem all over the world. Fighting with it is considered as one of the health priorities. It is actually predicted that 15.5 million people are going to suffer from cancer until 2030 [2]. In Iran, more than 30 thousand people are annually dying because of cancer [3].

Different methods such as: surgery, chemotherapy, hormone therapy, radiotherapy and biologic therapies (immunotherapy) or a set of these therapies are being used for treating cancer.

Chemotherapy is one of the treatment methods in patients suffering from cancer, which is being done for a remarkable number of patients (70 percent) with the aim of treating, controlling and relieving this disease [4]. In other words, chemotherapy is being used as a systematic method in treating cancer and cytotoxic drugs are being used in this method, which effectively prevent rapid development and growth of cancer cells [5].

These drugs emerge several side effects such as; fatigue, nausea and vomiting, anorexia, changes in taste, diarrhea,

constipation, inflammation of the oral mucosa, suppression of bone marrow cells, depression and stress and hair loss etc. [6]. In a study regarding chemotherapy side effects in teenagers, 59 percent of them stated that anticancer therapies complications are more bothering than the cancer itself [7].

Nausea and vomiting are the most common chemotherapy complications [7] and their prevalence has been reported to be 54-96 percent [8]. Chemotherapy Induced Nausea and Vomiting (CINV) remarkably influence the procedure of patients' quality of life and can cause serious metabolic problems such as hyponatremia, hypokalemia and metabolic acidosis. In addition, a patient who is encountering with inadequate nutritional intake due to nausea and vomiting has low resistance to infection and leads to weight loss. In patients who are under treatment for a long time and their chemotherapy side effects are not controlled well, some problems such as increased depression, decreased self-care and its consequences and decreased quality of life can be emerged [9-11]. In addition, patients who's CINV are not controlled well, need to stay in the hospital for longer time and pay higher costs [12].

The history of the drugs used for CINV initially refers back to 198, in which high-doses of metoclopramide was used and it had been developed by Antagonist Serotonin (5-HT₃



) in the early 1990s [1]. Despite the recent progresses in treatments (Pharmacotherapy) and the invention of serotonin antagonists, vomiting has been decreased, but nausea is still high, and it is estimated to be 60-72 percent [13]. In the study of Rouko (2000), 80% of the patients undergoing chemotherapy had experienced nausea and 40% were complaining about vomiting [14].

Although prescribing antiemetic drugs are counted as a standard treatment in controlling nausea, long-term and frequent use of these drugs causes harmful side effects such as headaches, constipation, fatigue, dried mouth, confusion, diarrhea, drowsiness, agitation and extrapyramidal effects. It increases patients' problems itself [13, 15], therefore identifying some methods for achieving success in preventing and decreasing CINV is left as a big challenge. Results of the studies show that high quality nursing interventions play a very important role in improving CINV [16-18].

In this regard, having a scientific background is one of the most important characteristics for the personnel of chemotherapy wards..

Nursing care are one of the most basic components regarding healthcare services and they are the most important provided cares in health environments [19].

One of the most effective methods for increasing nursing services quality is professional independence and improvement of personnel performance and creating, promoting and evaluating clinical instructions [20]. Considering the increasing number of the published articles in the world journals and on the other hand, due to the gap between theory and practice in nursing cares, a solution for achieving the best evidences and their applications are needed.. Actually in clinical work, one method should be chosen among all the available methods and this solution is creating an instruction [21]. Nursing care instructions are systematic developed instructions that enable nurses to take appropriate and correct decisions in clinical and healthcare conditions [20, 22]. Qualitative improvements of services, reduced costs, promoting the level of public health and putting national standards and international standards in the same level are the best reasons for applying instruction in health centers [23].

Since nurses have an effective role in promoting care quality, these instructions should be applicable for the nurses in different clinical conditions, therefore all the coming conditions and situations should be considered. Clinical instruction is useful if based on the new evidences and can influence health systems and are affordable. Therefore clinical instruction is specifically designed based on the best available evidences in health centers [23].

Evidence-based nursing has been stated as a method for health care according to the latest results in the recent years. The definition of evidence-based nursing is different among the nurses. This is while the accepted definition is applying the best research evidences with clinical expertise and skills and considering patients' needs and conditions. During this process the nurse can take appropriate clinical decisions through using available researches and evidences, his/her clinical skills and patient's performance [20,24].

Nurses need to be updated to keep pace with the latest

developments since they have an important and vital role in taking care of patients [25].

Therefore by considering the importance of improving the quality of nursing cares of the patients undergoing chemotherapy and the necessity of reducing CINV and increasing patients' quality of life, the researcher's priority was to design an evidence-based care instruction for the nausea and vomiting of the patients undergoing chemotherapy.

Methods

This study is a developmental study with an evidence-based performance approach by using Stetler model (in the form of nursing process). It has been conducted in the chemotherapy ward of the Baqiyatallah Hospital in 2014.

The Stetler model is an initial model regarding applying research in nursing and facilitating evidence-based performance and it includes five stages; preparation, accreditation, comparison study, application, performance and evaluation [21].

Preparation stage: includes collecting available instruction related to nausea and vomiting in the ward, available nursing diagnoses in the reference books, articles and nurses' opinions [21]. In order to collect available diagnoses from the scientific and reference books and the published articles, clinical questions method (PICO, Population or problem, Intervention, Comparison and Outcome) was used.

Inclusion criteria included: browsing all the articles in Persian and English about nursing cares of nausea and vomiting of the patients undergoing chemotherapy conducted during 2008-2014. Systematic review, met analysis, clinical trial tests, cohort, case control, case report, laboratory studies, specialists and experts' opinions and databases including; Cochrane, SID, Elsevier, Google scholar, Pubmed and Proquest that their full texts are available were used, based on the evidence-based pyramid. Considering the inclusion criteria, articles and convenient and purposeful sampling, 39 studies from among the 175 studied articles were considered the sample size of this study.

Accreditation: in this stage, a new instruction for vomiting and nausea nursing diagnosis was designed for the patients based on the evidence-based method and in the framework of nursing process [26].

For determining the instruction's content validity, the opinions of the professional faculty members of Baqiyatallah, Tehran and Shehid Beheshti Universities were used through the Delphi method in three stages of surveys. The content validation was done by experts.

Comparative study stage: including determining practicality of instruction and assessing their benefits and dangers [21]. This stage is done by the nurses working in the chemotherapy ward and it is done through focus group discussions. Focus group discussions was not done in this study due to the low number of the nurses working in the chemotherapy ward of the Baqiyatallah Hospital. As to this regard, an interview technique was used instead. Initially the designed instruction was given to the nurses who were responsible for direct care in the chemotherapy ward. Then,

all the interventions regarding implementation were discussed during the interviews. Firstly, the patients' consent regarding their participation in the study and using a tape recorder was achieved. Participants explained their questions clearly and the instruction was discussed in terms of its implementation by considering the conditions and facilities of the ward. At the end of every session, the recorded contents were written word by word and then the final conclusion was achieved according to the faculty members' opinions. Nezamzade's tool, and its validity and reliability (0.78) have been measured in previous studies before for assessing the quality of new instructions. This tool is categorized in three weak, moderate and good levels [27].

Application stage: the final instruction was prepared to be performed by determining the operational code by using the nurses' opinions [26].

Implementation and evaluation stage: the effect of the changes on the quality of the activities of health care institutes, staff and patients are evaluated through the mentioned study. It was not possible in this study due to time limitations and this is suggested for the future studies. Texts' right and direct and indirect citation styles have been observed in this study by providing related books and articles. Necessary consent was taken from the participants in order to document information.

Findings

The participants of the focus group discussion included 8 nurses with the average age of 33 ± 3.5 years old which were

working in the chemotherapy ward of the Baqiyatallah Hospital. Also, the three stages of the Delphi method was done with the participation of 10 professional faculty members of the Baqiyatallah Medical Sciences Tehran and Shahid Beheshti Universities. Four of the faculty members were lecturers with a PhD degree and six of them were PhD students and all of them had worked in the chemotherapy ward for more than five years. Regarding the available instruction, there was no nursing instruction specifically for taking care of nausea and vomiting in patients undergoing chemotherapy. Results of this study led to designing a specific instruction for CINV in patients undergoing chemotherapy.

The designed instruction included two sections:

1. The instruction identity: including the aim of designing instructions, nursing diagnosis, the target group, the used methods, experts' names, inclusion and exclusion criteria for choosing evidences, rules, the used sources and considering the instruction's expiry date.
2. The designed instruction: this instruction was designed according to the nursing process and includes some parts such as nursing diagnosis, symptoms, signs and nursing interventions.

Discussion

By analyzing the findings of this study, it is important to mention that firstly, the lack of some instructions specifically for nausea and vomiting in patients undergoing chemotherapy, indicated the necessity of conducting such a study.

Nursing diagnosis

nausea and vomiting
related to:

- Chemotherapy drugs
- Chemotherapy side effects

Evaluation criteria
Nausea, dizziness

Nursing interventions:

1. Assessing the history of nausea and vomiting in a patient by considering the beginning, duration, vomiting volume, repeating pattern, related factors and risk factors [1, 28, 31].
 2. Assessing and removing the causes of nausea [28, 29, 31].
 3. Using ginger tea [28, 29, 32-34].
 4. Massage therapy in the 6p area and all around the body [28, 29, 35-37].
 5. Prescribing slowly intravenous chemotherapy drugs [38, 39].
 6. Using hard candy, it should be tasty and it should be in the patients' mouth [38-40].
 7. Washing mouth after each time of vomiting before eating food [38-41].
 8. Food consumption 3-4 hours after chemotherapy [38,42]
 9. Music therapy [31,43,44]
 10. Relaxation and distraction [16, 39, 41, 45].
 11. High-energy and protein-rich food in small amounts, but many times if the patient is able to eat [39,41,46,47]
 12. Avoiding watery foods and caffeinated beverages like coffee, tea, cola and chocolate [38, 39, 48].
 13. Encouraging the patients to breathe deeply and slowly at the time of nausea [38,49]
 14. Teaching the patients how to determine nausea intensity by considering numerical scales from 0 to 10 [38,41,50,51]
 15. Teaching acupressure [1,9,28, 29, 52-54]
 16. Recommending Yoga [29,55,56]
 - 17.Recommending the patients to eat food and to drink beverages slowly [38,39,41]
 - 18.Recommending anti-nausea drugs to the physician [28, 29,57]
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Secondly, after designing nausea and vomiting instructions, its level of quality by using the Nezamzadeh's tool was in a good level.

Nausea and vomiting are the most common and annoying side effects of chemotherapy in patients suffering from cancer [58].

Although anti-nausea drugs are being used commonly, nausea and vomiting due to chemotherapy are reported by more than 70 percent of adults and 58 percent of the kids and teenagers that are undergoing chemotherapy [59]

Nausea due to chemotherapy is categorized in three groups: predicted, acute and delayed phases. Nausea happens before the beginning of chemotherapy (in patients who have the experience of chemotherapy) and acute nausea happens in the first 24 hours after chemotherapy and delayed phase happens after 24 hours and more than 5 days after chemotherapy [60].

There are many studies regarding nausea and vomiting due to chemotherapy, which were in consistent or non-consistent with the present study.:

Non-pharmacological drugs are pointed out for controlling CINV since chemical drugs cannot be useful for all of them. These non-pharmacological drugs besides pharmacological drugs can achieve more success in controlling nausea and vomiting and it has been proved in different studies.

Mustian et al. (2011) designed an instruction for decreasing CINV. Since drugs do not treat nausea and vomiting completely, Mustian used non-pharmacological drugs such as ginger, acupuncture, acupressure, relaxation (progressive muscle relaxation), guiding visualization, Yoga, hypnotic and aerobic exercises besides pharmacotherapy for controlling the predicted, acute and delayed phases for decreasing CINV [29]. In this regard, in a review article about managing nausea, vomiting and diarrhea in critically ill patients Makic (2011) specifies some pharmacological and non-pharmacological strategy interventions such as acupuncture, acupressure, aromatherapy, providing educational and supportive information, exercises, guiding visualization, ginger and music therapy as an instruction for nurses [31].

Considering the limited impact and dangerous complications of consuming chemical drugs, there is an increased tendency to using non-chemical drugs, and non-industrial treatments such as medicinal herbs and complementary medicine. One of the herbs which comes extremely useful in this regard is ginger. Gingers anti-nausea property has been proved in different studies. The results of Ghanbari et al.'s (2011) study which was conducted on 44 patients undergoing chemotherapy revealed that using ginger is a simple and safe method, which can be used as the supplementation of anti-emetic drugs in patients undergoing chemotherapy [33]. According to Ibrahim et al.'s (2013) study about the effect of ginger in controlling CINV, which was conducted in the form of a clinical trial study on eighty patients with breast cancer, taking capsules of ginger root powder (one gram per day) from three days before chemotherapy to three days after can decrease nausea in the predicted and acute phases [61]. Also, Ryan et al. (2012) conducted a study about the effect of ginger on decreasing nausea in acute phase on 756 patients

undergoing chemotherapy. These patients consumed ginger from half a gram to one gram of ginger supplementations from three days before and three days after chemotherapy. Results revealed that this supplementation it leads to an intensive decrease of nausea due to chemotherapy in acute phase [34]. In the study of Manusirvithaya et al. (2004), 43 patients who were suffering from cancer and were undergoing chemotherapy with the aim of determining antiemetic effects of ginger on CINV were studied. Results showed that ginger is effective in decreasing CINV just in the delayed phase [62]. In a study conducted by Zick et al. (2009), there was no difference between placebo and two doses of ginger tablets (1 and 2 mg) in the prevalence or severity of acute or delayed phases of CINV. This study was conducted on 162 adult patients [63]. The reason for which ginger did not decrease nausea and vomiting in this study can be due to not consuming it a few days before chemotherapy. In the study of Ryan et al. (2010) pharmacological and non-pharmacological instructions such as ginger supplementations, acupressure in P6 are provided for preventing nausea and vomiting. In this study the researcher suggests that in order to prevent nausea and vomiting, treatments should be started a few days before chemotherapy [28].

Such conflicting results can be because of some limitations due to the small sample sizes of these studies or lack of conducted studies on different groups of cancer patients. The important point is about beginning ginger three days before to three days after chemotherapy.

One of the other methods of controlling nausea and vomiting is massage therapy. In the study of Mazloun, (2013) in regards to the effect of massage therapy on nausea and vomiting due to chemotherapy in children with cancer (4 to 18 years old), 70 people were randomly divided into two experimental and control groups. Samples of the experimental group achieved a Swedish massage for 20 minutes 24 hours before and 24 hours after chemotherapy. It was clearly seen that these massages decreased the patients' nausea and vomiting. According to the findings of this study, stress and pain are two important factors in increasing CINV and massage therapy causes relaxation and decreases stress and pain [36]. In this regard, a study has been conducted about the effect of massage therapy on nausea, anxiety and depression in patients with breast cancer which had been undergoing chemotherapy in Sweden. The mentioned study was a clinical trial study, which was conducted on 39 patients. The participants were divided into two groups. Massages was done five times for twenty minutes in the experimental group. This led to a decrease of nausea in this group [35]. In Ernst's (2009), 50 articles were chosen through assessing data of 6 databases (AMED, Cochrane Library, British Nursing Index, CINAH, EMBASE, MEDLINE) via a systematic review. After assessing these articles, it was concluded that massage therapy decreases pain, stress, anxiety, nausea and vomiting, anger, depression and fatigue [37].

In the study of Sturgeon et al. (2009) in regards to the effect of massage therapy on the quality of life of the patients with breast cancer, participants have been massaged for thirty minutes per week in three successive weeks. After three

weeks, the patients' anxiety had decreased and their sleep quality, performance and life quality had increased. This was while there was no decrease in nausea and vomiting [64].

There are also some other ways for controlling nausea and vomiting, which have been emphasized in this study.

In a clinical trial study, which was conducted by Othman Said (2009), the effect of acupressure in the P6 area on CINV in patients with breast cancer was assessed. In this study, participants were in three 42-member groups (experimental, placebo and control groups), and achieved acupressure with wristband influences nausea and vomiting delayed phase [1]. Also in the two studies of Gardani and Dibble (2007) acupressure did not influence the acute phase of CINV [65, 66].

In the study of Ezzo (2005), using acupuncture along with anti-emetic drugs decreases the acute phase of CINV [67].

In the study of Harder et al. (2012) in regards to the effect of Yoga interventions on the quality of life of patients with breast cancer, 18 articles till 2012 which were similar to the criteria of this study were extracted. In a systematic review of data from eight databases (Scopus, AMED, CINAHL, Embase, Cochrane Library MEDLINE, Psych INFO, Web of Science), Yoga was introduced as a complementary medicine for decreasing intensity and frequency of nausea and vomiting, stress, fatigue, insomnia and pain after chemotherapy [55]. Among the other studies in this regard, the study of Raghavendra et al. (2007) about the effect of Yoga on CINV in patients with breast cancer can be pointed out. This study was a clinical trial study, which was conducted on 62 patients and caused a decrease of vomiting intensity and frequency in the predicted phase of nausea [68].

Conclusion

Since the evidence-based instruction regarding CINV are not available in the wards and according to the conducted studies, using these instructions leads to a promotion of care quality and decreases the complications and duration of hospital stay. Therefore, it is recommended to conduct some studies regarding the evaluation of these instructions as a standard reference in providing nursing services in the chemotherapy ward and also the other wards.

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