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## Health Education by Nurses: Self-Care of Patients With Chemotherapy From a Specialized Cancer Institute in Lima-Peru



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### Abstract

Health education helps patients during the cancer disease process. Thus, self-care induces to improve the quality of life of patients undergoing chemotherapy. The role of oncology nurses plays an important role in promoting self-care and improving the quality of life in their personal care. In Peru (2019), 66,000 new cases of cancer are registered according to statistics from the National Institute of Neoplastic Diseases, 60% of which are women with cervical and breast cancer and 40% of which are men with prostate and lung cancer. 80% of these cases receive outpatient chemotherapy treatment and to avoid complications in their health they require timely information to assume their own self-care. The purpose of this research was to determine the effectiveness of an educational intervention on self-care in patients who underwent ambulatory chemotherapy in which 3 educational sessions were carried out through pre and posttests by the nurses of the Specialized Oncological Institute. The research design was quasi-experimental longitudinal, involving a total of 90 patients undergoing chemotherapy attending the service. The questionnaire of self-care was applied which consisted of 4 dimensions: food, hygiene, prevention of infections and to avoid complications. The results obtained in the pre-test were that 60% reached a low level and 22.2% a high level. After the educational intervention in the post-test it was evidenced that 96.7% obtained a high level and 3.3% a medium one. It was demonstrated the increase of knowledge about self-care in feeding, hygiene, prevention of infections and avoiding complications in patients. It is concluded that patients who receive educational intervention assume self-care in their daily lives. Therefore, nurses should provide feedback on knowledge and practice, incorporating strategies to avoid complications in patients.

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## INTRODUCTION

Cancer is a chronic degenerative disease, which occurs mainly in low- and middle-income people, and has become a public health problem. In 2018, the World Health Organization (WHO, 2018) noted that this disease has caused 8.8 million deaths and is the second largest cause of morbidity in the world. Therefore, approximately one third of cancer deaths have behavioral and dietary risk factors, such as low fruit and vegetable intake, tobacco use, alcohol consumption, lack of physical activity, and an increase in the population with a high body mass index.

In Peru, cancer is the second cause of death, becoming a public health problem, being the most frequent in women breast cancer, so early detection with chemotherapy is the key to timely treatment, as stated in current national statistics, where 95% receive treatments with chemotherapy. (Peruvian News Agency, 2019)

In this sense, the (American Cancer Society, 2018) refer that most patients diagnosed with cancer should be treated with chemotherapy in a timely manner, because it is a multiple use alternative, and the objective is to reduce the tumor before surgery, radiotherapy or concurrent or complementary treatment. Chemotherapy can fight fast-growing cells, but it can also affect normal cells, such as the cells that mainly form hair and blood. In some cases, patients who receive chemotherapy have side effects, such as nausea and vomiting, skin changes, ulcers in the mouth and throat, which is called mucositis, and can significantly change nutrition; in addition, there is redness, itching, problems with wound inflammation and infection, and changes in sexual life, which significantly affect psychological well-being.

However, when cancer patients begin treatment with chemotherapy, they present physical, physiological and spiritual changes, as mentioned by Sanmartí (1985), who indicates that patients who receive chemotherapy suffer changes in their lives and need to adapt in order to face the process of the disease.

I declare that some authors like: Rezaee, Shokrpour, Rahimi and Mani (2020) declare that cancer patients need to strengthen the education of their peers, considering that educational interventions support the disease and sustain the side effects with self-efficacy. In this sense, in the United States, Coolbrandt, Wildirers, Laenen,

Aertgeerts, Dierckx and Van (2018), expressed the need to support learning for self-efficacy and the consequences of health interventions to generate well-being in patients. Likewise, Santos and De Andrade in Brazil (2019), argued that self-care is an effective method of care, because it helps to take effective action on the effects of chemotherapy.

In the same line, Altun and Sonkaya (2017) expressed the importance of the health education of the health professionals for the integral care of the patients submitted to chemotherapy, referring that the self-care becomes a support system to reduce the deficits of self-care and to promote the well-being of the patient. These statements are consistent with Riese, Weib, Borges, Beylich, Dengler and Hermes-Moll (2017) who emphasize that cancer patients benefit from standardized educational programs and that oncology nurses help and counsel patients to avoid adverse effects related to chemotherapy treatment.

Therefore, Cruz, Ferreira, Vasquez, Mata and Reis (2016) emphasize the relevance of having a validated educational manual, supported by printed materials, because they serve as a guide and provide information for treatment compliance. Finally, Li, Guo, Tang, and Yang (2018), managed to demonstrate that the effectiveness of nursing intentions has a positive effect on cancer patients.

In this sense, Orem's theory of self-care in patients undergoing chemotherapy encourages the oncology nurse to provide a safe environment of knowledge and self-care skills on an ongoing basis, in order to identify difficulties and limitations in compliance with nutrition, hygiene, infection prevention, and avoid complications.

Consequently, Jiménez and Meneses (2015), maintain that the nurse must design a personalized plan of education on self-care before, during and after the chemotherapy treatment, where the satisfaction of basic needs such as feeding, prevention of infections, hygiene measures, and avoid complications is optimized in addition to meeting the therapeutic demands that the patient requires. It is therefore necessary to maintain a system of nurses that monitors their self-care behaviors and strengthens interpersonal relationships and effective communication. This is why it is necessary to maintain a system of nurses that monitors self-care behavior and strengthens interpersonal relationships and effective communication.

It should be noted that patients undergoing chemotherapy will be full of uncertainty, insecurity, fear and dread, as pointed out by Estrada (2017), who refers that patients undergoing chemotherapy treatment have changed their attitude towards self-care after guidance and counseling by the nurse. Since, patients diagnosed with cancer need an emotional preparation to face chemotherapy treatment, during the whole process of the disease, where health education is the key, since it provides security to the patient to comply with self-care actions, which reduce the negative effects of chemotherapy treatment in terms of nutrition, hygiene measures, infection prevention, and avoid complications.

In this sense, promoting self-care is to achieve the maturity in the patient to assume healthy behaviors continuously, when the patient undergoes chemotherapy treatment, he experiences nausea and vomiting, so it is indicated changes in the diet as eating a light breakfast, avoiding fatty and spicy foods. Similarly, hydration is suggested the consumption of 2 liters of water per day, in addition to consuming proteins, vegetables, fruits and avoiding the consumption of harmful substances with alcohol and snuff. In addition, to avoid infections caused by possible contact with contaminated food, they are advised to wash, disinfect and cook food such as vegetables and fruits. In the hygiene measures are promoted hand washing, oral cleaning with a soft brush and bathing with soap every day, can provide comfort. Prevention of infections are related to fulfilling actions that generate the consumption of food that ensure proper handling and hygiene of food for consumption. It also strengthens personal hygiene, hand washing and strengthening a clean and healthy environment. In relation to avoid complications is to assume responsibility for prevention measures in relation to avoiding highly contaminated environments, avoid overcrowding in the environment where it interacts, consumption of harmful substances such as snuff and alcohol, as well as avoid self-medication that deteriorate the quality of life of the patient.

## METHODS

The research was a quantitative, quasi-experimental and longitudinal in focus (Hernández, Fernandez & Baptista, 2014). The population

included a total of 90 adult patients of both sexes, diagnosed with breast cancer, cervical cancer, prostate cancer, stomach cancer and lymphomas; who underwent outpatient chemotherapy treatments and who attended every 21 to 25 days, to the outpatient chemotherapy service according to the admission and care record. A self-care scale containing four dimensions was applied: Food, hygiene, infection prevention, and avoidance of complications, which consisted of 24 items, with a Likert scale and the instrument was validated by 5 experts, with a Cron Bach Alpha of 0.8. For the execution of the research, patients were invited to participate voluntarily, and were given informed consent for the corresponding signature. Subsequently, the self-care instrument was applied which included 4 dimensions of feeding, hygiene, prevention of infections and avoid complications; with pre and post educational intervention to the 90 patients with chemotherapy treatment, who attended the outpatient chemotherapy service of a specialized oncological institute in Lima Peru. Three personalized educational sessions were held, with an average of approximately 1 hour each session, and didactic materials (trptychs) were distributed. The doubts and questions of the participants were reinforced. Data processing in graphs and tables was done in the SPSS program, supported by Microsoft Office.

## RESULTS

It is observed that in the self-care pre-test, patients with chemotherapy treatment reach 60% low level, 22.2% high level and only 17.8% medium level. These results vary significantly in the educational intervention post-test, where 96.7% reach a high level and 3.3% a medium level.

In relation to self-care, according to the dimensions of the pre-test: Food: 52.2% low level and 26.7% high level; in Hygiene: 42.2% low level and 17.8% high level; in prevention of infections, the high level was 36% and the low level 30%; and avoid complications: 55.6% low level and 8.9% high level. Subsequently, in the post-test of self-care: in nutrition it reached 94.4% high level and 5.6% medium level; prevention of infections: 91.1% high level and 8.9% medium level, in the dimensions of Hygiene and Prevention of complications, a 100% high level was achieved.

**Table 1** Frequency pre and post-test self-care of educational intervention for patients with chemotherapy in a specialized cancer institute

Variable	EDUCATIONAL INTERVENTION			
	PRE TEST		POST TEST	
	Frequency	Percent (%)	Frequency	Percent (%)
High	20	22.20%	87	96.70%
Medium	16	17.8	3	3.30%
Under	54	60%	0	0
<b>Total</b>	<b>90</b>	<b>100%</b>	<b>90</b>	<b>100%</b>

Source: Primary Data

**Table 2** Dimensions of self-care: food, hygiene, prevention of infection and avoid complications Educational intervention before and after the test for patients with chemotherapy in an institute specializing in cancer Lima Peru

Level	Self-Care Dimensions															
	Food				Hygiene				Infection Prevention				To Avoid Complications			
	PRE		POST TEST		PRE		POST TEST		PRE		POST TEST		PRE		POST TEST	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
High	24	26.7	85	94.4	16	17.60	90	100	40	36	82	91.1	8	8.9	90	100
Medium	19	21.1	5	5.6	36	40	0	0	19	17	8	8.9	32	35.6	0	0
Under	47	52.2	0	0	38	42.4	0	0	31	30	0	0	50	55.6	0	0
<b>Total</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>90</b>	<b>100</b>

Source: Primary Data

## DISCUSSION

The self-care promoted by the oncology nurse specialist has the purpose of optimizing the health conditions during the disease process, achieving positive results in its recovery. (Blasco y Caballero, 2019). The objective of the present research was to determine self-care in patients with chemotherapy in a pre - post educational intervention test, carried out by nurses from a specialized oncology institute. The results showed that in the pre-test the level of self-care was: 60% low and 17.8% medium and after the educational intervention in the post-test the levels were: 96.7% high and 3.3% medium. This significant change allowed minimizing the effects of chemotherapy and favoring the patient's well-being. These results coincide with the evidence of Almohammadi, Alqarni, Alraddad, Alzahrani (2020), who showed that patients who received education by the nursing professional acquired greater knowledge and high self-care behaviours, compared to those who received basic information.

Likewise, Cruz, Ferreira, Vásquez, Mata and Reis (2016), expressed that patients with chemotherapy treatment, who have received educational interventions on self-care, have adopted healthy lifestyles that have helped them reduce the effects of chemotherapy, and have seen a rapid recovery and improvement in quality of life. Likewise, Riese, Weib, Borges,, Beylich, Dengler and Hermes-Moll (2017), showed that education and training of patients with chemotherapy, assumed effective self-care behaviors.

On the other hand, authors such as Karimi, Makhsosi, Seyedi-Andi, Behzadi, Moghofeh, Mohammadasrabadi, et al. (2017), determined that health education in cancer patients is a strategy to reduce the effects produced by chemotherapy, which will help to detect adverse events for early management and avoid health complications.

We conclude that, self-care is a timely strategy to ensure that adverse effects from chemotherapy are minimized. According to Silvia and da Cunha (2015), who argue that adopting self-care strategies

allows to overcome the side effects of chemotherapy, providing safety and well-being to the patient. Health education is a challenge for health professionals, especially for nurses who must seek to develop educational strategies, to help maintain knowledge, skills and attitudes of self-care in patients with chronic diseases and in some cases, with many economic limitations, which place them in a high level of vulnerability and fragility. (Jimenez y Meneses, 2015)

In reference to the dimensions of self-care evaluated in the pre-test: Food, 52.2% reached a low level and 26.7% a high level; in Hygiene, 42.2% a low level and 17.8% a high level; in Prevention of infections, the high level reached 36% and 30% a low level and avoid complications, 55.6% a low level and 8.9% a high level. Later, in the post-test of educational intervention, self-care in nutrition reaches 94.4% high and 5.6% medium level. Infection prevention: 91.1% high level and 8.9% medium level; in the dimensions: Hygiene and Avoid complications, 100% reach a high level. Results similar to those proposed by Karimi, Makhsosi, Seyedi-Andi, Behzadi, Moghofeh, Mohammadinasrabadi K., et al. (2017), who maintain that most patients presented side effects, which were preventable, if they assumed responsible self-care, which would help them reduce the effects of nausea and vomiting. Likewise, Cruz, Ferreira, Vásquez, Mata, Reis (2016), pointed out that the patients who received specialized education on post-chemotherapy self-care and were given educational materials were able to assume self-care behaviors.

This is stated in a research published in 2020 in Stockholm Sweden, Fjell, Langius, Nilsson, Wengstron, Sundberg (2020), who found that in the group of patients who received an educational intervention on symptoms and self-care advice, nausea and vomiting, as well as loss of appetite, constipation, general malaise, improved emotional functioning compared to the control group that only received classical education. For Ramos, Yousaf, Badar and Abu (2020), who state that oncology nurses who educate the patient, play an important role in minimizing the side effects produced by chemotherapy.

Nurses play an important role in preventive education and in managing the warning signs and symptoms that can produce or cause negative effects after chemotherapy, so you should design a personalized nursing intervention plan with holistic

care, to fully meet basic and treatment needs. Similarly, the self-care deficit refers to the person's lack of capacity and maturity for their own self-care and, therefore, the nursing system helps to maintain and restore the patient's self-care behaviours, improving knowledge, skills and attitudes. Self-care deficits increase hospital readmissions, complications and raise health care costs. (Jimenez y Meneses, 2015)

Thus, in Turkey 2017 Akin and Kas (2019), refer that cancer patients do develop self-confidence, when they assume self-care behaviors, because they result in a positive impact on cognitive performance and positively influence the patient's quality of life. Based on these statements, health promotion and prevention should be assumed from an educational approach, where self-care should prevail within family spaces as preventive measures for the self-care of the patient and the family. Likewise, the delivery of educational materials allows for safe and continuous actions that manage to avoid a deficit in self-care. The nursing system is one of the activities that accompany patients to recover, maintain and rehabilitate their health during the whole process of the disease. (Jimenez y Meneses, 2015) Authors such as Wang, Yin y Jia (2019), indicate that self-care measures are effective in improving physical and mental conditions, in patients receiving chemotherapy.

Finally, the commitment of all actors involved in the health care process is to educate through standardized guidelines with printed material on patient and family health issues to minimize threatening situations during the disease process. To this end, health professionals must provide clear and accurate information and explanations about the diagnosis, treatment and management of the disease, so that the patient and family assume responsible decisions aimed at their own self-care, this means that behavior patterns are interacting according to their lifestyle. (Marriner, Tomey y Raile, 2011) (Meneses y Mayorca, 2014).

## CONCLUSION

It is proven that the health education which was provided by nursing professionals about self-care in cancer patients allows for an increase in knowledge after an educational intervention, as well as sensitizes the patient and the family to incorporate self-care, achieving maturity to assume healthy behaviors in their daily lives, reducing the side

effects of chemotherapy to improve the quality of life. It was also shown that in the dimensions of self-care in cancer patients after the educational intervention they managed to obtain a high level of knowledge in the dimensions: hygiene and avoiding complications, while the average levels of knowledge were the dimensions: Nutrition and infection prevention. These findings allow us to clarify the importance of continuous education in patients with chemotherapy to avoid complications and side effects of treatment.

## SUGGESTION

It is suggested that the cancer patient and family can receive health education to manage self-care to reinforce knowledge, awareness and strategies that promote self-care to minimize the side effects of chemotherapy.

It is suggested that within the specialized oncology services, the nursing professionals offer a personalized advice in the self-care directed to the patient and his family to maintain the quality of life in the time.

We suggest that other researchers carry out research in other areas with the same methodology used in this research, in order to generate a discussion that will enrich this line of research.

## REFERENCES

- Andean. Peruvian news agency. (2018). In Peru, 60% of breast cancer cases are detected at an advanced stage [Internet]. [cited April 30, 2020]. Available at: <https://andina.pe/agencia/noticia-en-peru-60-casos-cancer-mama-se-detectan-etapa-avanzada-729229.aspx>
- Altun I. and Sonkaya A. (2017). The level of personal care measures for daily life in people who received chemotherapy. 20 (6): 508-508. DOI: 10.1089 / pop.2017.0029
- Almohammadi A, Alqarni A, Alraddadi R, Alzahrani F (2020). Evaluation of patients' knowledge in the management of chemotherapy side effects (avaliação dos conhecimentos dos doentes na gestão dos efeitos secundários da quimioterapia): case of the king abdul-aziz university hospital. 35 (2): 334-8. DOI:10.1007 / s13187-019-1469-2
- Akin S, y Kas C. (2019) Research into the relationship between fatigue, self-efficacy and quality of life during chemotherapy in patients with breast, lung or gastrointestinal cancer. *eur J cancer care*, 28 (1): 128-98. DOI: 10.1111 / ecc.12898
- American Cancer Society. Chemotherapy, what is it and how does it help?
- Blasco A. and Caballero C. (2019). Side effects of chemotherapy - seom: Spanish society of medical oncology. [Internet]. 2020 [cited on May 16, 2020]. Available in: <https://seom.org/115.informacion-al-publico-guia-de-tratamientos/efectos-secundarios-d-la-quimioterapia>
- Coolbrandt A, Wildirers H, Laenen A, Aertgeerts B, Dierckx, B. and Van T. (2018). Nursing intervention to reduce the burden of symptoms during chemotherapy. 5 (1): 115-28. DOI: 10.1188 / 18.ONF.115-128
- Cruz F, Ferreira E, Vásquez C, Mata L and Reis P. (2016). Validation of an educational manual for head and neck cancer patients undergoing radiotherapy. (*Rev Latino-Am Enfermagem*); 24 (0). Available at: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0104-11692016000100337&lng=en&tlng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-11692016000100337&lng=en&tlng=en). DOI: 10.1590 / 1518-8345.0949.2706
- Road V. (2017). Effectiveness of nursing counseling in patient and family health care at the HNERM ambulatory chemotherapy service. [cited 13 de mayo de 2020]; Available at: <http://repositorio.unheval.edu.pe/handle/UNHEVAL/4201>
- Fjell M, Langius-Eklöf A, Nilsson M, Wengström Y, and Sundberg K. (2020). Reduction of symptomatic load with the support of an interactive application during neoadjuvant chemotherapy for breast cancer - a controlled randomized trial. *The breast*; 51: 85-93. DOI: 10.1016 / j.breast.2020.03.004
- Hernandez S, Fernandez C. and Baptista L, (2014). Research Approaches. In *Metodología de la Investigación* (p.5-9) México: McGraw-Hill. DOI: 10.1016 / j.breast.2020.03.004
- Jiménez P. and Meneses M. (2015) Introduction to nursing. Cesar Vallejo University ISBN: 978-612-4158-30-8
- Karimi S, Makhsofi B, Seyedi-Andi SJ, Behzadi M, Moghohfeh Y, mohammadinasrabadi K, et al. (2017). Research of the effect of a self-education program on the severity of nausea and emesis in patients with colorectal cancer under chemotherapy. *JMDH*; Volumen 10: 301-7. DOI: 10.2147 / JMDH.S131111
- Li P, Guo YJ, Tang Q and Yang L. (2018). Effectiveness of nursing intervention to increase hope in cancer patients: a meta-analysis. (*Rev Latino-Am Enfermagem*) 26 (0). Available at: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0104-11692018000100604&lng=en&tlng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-11692018000100604&lng=en&tlng=en) DOI: 10.1590 / 1518-8345.1920.2937
- Marriner I, Tomey A. and Raile M. (2011). Models and theories of nursing. 7th ed. Madrid: Elsevier.
- Meneses M. and Mayorca C. (2014) Self-care practices and targa adherence in people living with hiv enrolled in the program at a national hospital in Lima - Peru.

- Naranjo Y, Concepción J, Rodríguez M. (2017). A teoría do defice de autocuidados: Dorothea Elizabeth Orem. *gazeta medicoespiritual*. 19(3): 89-100. [http://scielo.sld.cu/scielo.php?script=sci\\_abstract&pid=S1608-89212017000300009&Ing=es&nrm=iso&tlng=es](http://scielo.sld.cu/scielo.php?script=sci_abstract&pid=S1608-89212017000300009&Ing=es&nrm=iso&tlng=es)
- The 'Regan P, McCarthy G, O'Reilly S, Power D, Bird B, Murphy C, et al. (2019). Cancer-related fatigue and self-care agency: a multicenter survey of patients receiving chemotherapy. (*J Clin Nurs*) 28 (23-24): 4424-33. DOI: 10,1111/jocn.15026
- Peruvian news agency. (2019) Peru will close 2019 with 66,000 new cases of cancer [cited April 30, 2020]. Available at: <https://andina.pe/agencia/noticia-peru-cerrara-2019-66-mil-nuevos-casos-cancer-756807.aspx>
- Ramos R, Yousaf M, Badar F. and Abu M. (2020). He perceived well-being, social support and self-management behavior among women with nausea and vomiting related to chemotherapy in a tertiary hospital in lahore, Pakistan [Internet]. [quoted April 19, 2020]. Available in: <http://www.apjon.org/article.asp?issn=2347-5625;year=2020;volume=7;issue=2;spage=209;epage=217;aulast=Ramos>
- Sanmartí L. (1985) *Educación en salud: principios, métodos y aplicaciones*. Ediciones Díaz de Santos; 280 p. ISBN: 978-84-86251-19-2
- Santos Y. y De Andrade J. (2019) *Validación de requisitos de desarrollo de autocuidado de.*; 4.
- Silvia, J. y da Cunha, M. (2015). *Pontífice Sousa P. Estratégias de autocuidado de pessoas with cancer submitted to chemotherapy / radiotherapy and its relationship with comfort. (Enfermería Global) 2015; 14 (1): 372-83. ISSN: 16956141*
- Rezaee R. Shokrpour N. Rahimi M. and Mani A. (2020). The effect of peer education on self-efficacy and mental adaptation of breast cancer patients undergoing chemotherapy. *Bangladesh J Med Sci*. March 10, 2020; 19 (3): 558-66. DOI: 10,3329 /bjms.v19i3.45875
- Riese C, Weib B, Borges U, Beylich A, Dengler R. and Hermes-Moll, K. (2017). Efficacy of a standardized patient education program on therapy-related side effects and unplanned interruptions of oral cancer therapy: a cluster-randomized controlled trial. *Support Care Cancer*. 25 (11): 3475-83. DOI: 10,1007 /s00520-017-3770-0
- Wang Z, Yin G and Jia R. (2019). Impacts of personal care education on adverse events and mental health-related quality of life in breast cancer patients undergoing chemotherapy. *Complementary therapies in medicine* 43:165-9. DOI: 10,1007 /s00520-017-3770-0
- World Health Organization (2018). Cancer [cited April 23, 2020]. Available at: <https://www.who.int/es/news-room/fact-sheets/detail/cancer> Andina.