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Quality of life of patients during antineoplastic therapy: a descriptive study

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ABSTRACT

Aim: To evaluate the quality of life of cancer patients using the device for antineoplastic continuous infusion.

Method: This is a cross-sectional study conducted with 28 patients in a health insurance company of Fortaleza/CE in 2013, by applying the life quality assessment tool of the World Health Organization (WHOQOL-BREF).

Results: The domain most affected was health satisfaction, which was negative in both antineoplastic administration cycles, while the perception regarding quality of life was considered regular. The highest average domain was social relations; the lowest average was the psychological domain for both cycles.

Conclusion: It is important to know the determinants that influence the quality of life of cancer patients, allowing the improvement of multidisciplinary interventions to increase adaptation to the experience of the disease.

Descriptors: Quality of Life; Oncologic Nursing; Nursing Care; Nursing Service, Hospital; Patient Participation.

INTRODUCTION

The high incidence of cancer in Brazil is a global trend due to the increase in life expectancy, the adoption of unhealthy habits, rampant urbanization, and new consumption patterns. This disease should be considered as a serious public health problem, especially amongst developing countries, where it is expected that the impact of cancer in the population corresponds to 80% of more than 20 million new cases estimated for 2025 in the coming decades. Therefore, thinking about the quality of life for patients with cancer has become a daily challenge according to professionals working in oncological care^(1,2).

Treatment with antineoplastic agents has been widely employed, since 60% to 70% of patients need this therapy, using cytotoxic agents in separately or combined for treating malignant tumors. It is one of the most important ways to fight cancer, as it allows the early treatment of micro metastasis at a systemic level⁽³⁾.

Technological advances in cancer treatment make it possible to offer some forms of cancer chemotherapy through the use of totally implanted catheters and continuous infusion devices in order to offer a better quality of life. Studies on the quality of life in the area of oncology have become more intense in recent decades, being an important indicator of treatment outcomes for cancer because, in this area, you cannot think only of increased survival^(4,5,6).

In considering the high prevalence of oncological diseases and the increasingly frequent use of continuous infusion devices for antineoplastic administration at home, the following question arises: how is the quality of life of cancer patients treated with antineoplastic regarding the use of a continuous infusion device?

Therefore, in analyzing two moments of the treatment period, we have aimed to

evaluate the quality of life of cancer patients using the device for continuous infusion of antineoplastic by identifying the quality of life domains affected.

METHOD

This is a cross-sectional study conducted in a health insurance company located in Fortaleza/CE. This service provider conducts the monitoring of patients who require therapy with antineoplastic, including distribution of the device for the *Sistema Único de Saúde* (SUS) (Unified Health System). It is noteworthy that the operator's responsibility is to provide the request protocol, analyze the best management proposal and authorize the proposed treatment; from then on, the patient will be referred to clinics accredited by the operator for catheter implantation and follow-up treatment.

The population consisted of all the patients of the health insurance operator who were authorized to have the device installed in the months from April to June 2013, totaling 36 subjects. However, there were losses; these were patients who did not live in the capital (n=5), refusal (n=2) and death (n=1), totaling 28 subjects.

The inclusion criteria were the following: to be literate, to be older than 18 years, to have a confirmed medical diagnosis of malignancy via medical record and to be under treatment with antineoplastic using a continuous infusion device, not having made use of the device in the past.

The initial contact with the patients was made by telephone, since they were identified at the time that the chemotherapy request reached the health insurance provider. In this telephone contact, patients were asked about their availability for taking part in this study and receiving a visit that could either occur at home or in the

clinic during the administration of the therapy, according to their convenience. This first contact was followed by the other movements to collect information.

Data collection was performed in two stages: the first and third cycles of treatment. This limitation occurred because, in the first cycle, patients experienced a new moment and discoveries and, in the third cycle, they are already familiar with the use of the device, thus allowing the assessment of quality of life at two different times.

A self-administered instrument was applied containing the variables of gender, age, marital status, origin, profession/occupation, educational level, religion and the side effects of cancer chemotherapy; if necessary, the patients could talk to the researcher. Information on the clinical aspects was obtained at a single time through the active query to the database in the health insurance provider; such as diagnosis, presence of metastases and performance of concomitant radiotherapy.

Quality of life was assessed using the WHOQOL-BREF instrument; the abbreviated English version for "World Health Organization Quality of Life Assessment Tool", validated for the Brazilian culture⁽⁷⁾. This is a reduced version of the WHOQOL-100, composed of 26 questions: two general items on quality of life and health satisfaction; and the remaining questions representing the 24 aspects that make up the original instrument. It consists of four domains: physical, psychological, social relationships and environment⁽⁸⁾. The domains were enclosed with four categories: poor (1 to 2.9), regular (3 to 3.9), good (4 to 4.9), and very good (5 points). The responses concerning the perception of quality of life and health satisfaction were quantified and stratified into four categories: poor (1 to 2.9), regular (3 to 3.9), good (4 to 4.9), and very good (5 point).

After checking the collected data and the input of instruments by using Microsoft ACCESS 2003, an exploratory analysis carried out by applying Cronbach's alpha coefficient to the sociodemographic and clinical characteristics and validation of internal consistency of the responses of the WHOQOL-BREF. The Wilcoxon nonparametric test of equality of means was used for paired data to verify the mean differences between cycles (1st and 3rd). The significance level was 5% ($p \leq 0.05$). We used the statistical software STATA version 8 for the generation of results.

The project was approved by the Research Ethics Committee of the Federal University of Ceará, according to protocol 243,289. Participants signed the consent form in two ways. The formal consent of the health insurance company was attained by signing the Statement of Consent. Resolution 466/12 of the National Health Council was respected.

RESULTS

As for the sociodemographic characteristics of the 28 patients using a continuous infusion device, there was a prevalence of women (15; 53.6%) with a mean age of 58.2 years ($sd = \pm 13$ years). The predominant age group was between 51 and 60 years (32.1%), married (17; 60.7%), Catholic (19; 67.9%) and with a low level of education, since 12 individuals (42.9%) had less than 10 years of study. As regards occupation, 10 (35.7%) were self-employed.

Regarding the characterization of the clinical aspects, the most common type of malignancy was the colon and rectum, affecting 16 (57.2%) patients; metastasized (15; 53.6%); with the liver as the most affected organ. Surgical treatment was performed in 25 (89.3%) patients, while the most frequent surgery was colectomy.

Regarding the purpose of antineoplastic chemotherapy, most were for palliative treatment (16; 57.1%). The main antineoplastic protocol was FOLFOX (fluorouracil, leucovorin and oxaliplatin). The fluorouracil drug was present in all (100%) protocols.

With regard to the occurrence of side effects during anticancer treatment, it was found that patients cited nausea, vomiting, mucositis, diarrhea and headaches, as well as dizziness and fatigue. The study observed that the gastrointestinal symptoms were the most frequent, as 23 patients (82.1%) reported the occurrence of any unwanted gastrointestinal effects.

By applying the WHOQOL-BREF, the results obtained then revealed, through the application of Cronbach's alpha coefficient, a good level of internal consistency between the responses to the items globally in the first and third cycles: 0.88 and 0.89, respectively (Table 1).

By analyzing the average values of the WHOQOL-BREF scores related to global items for both cycles, the perception of quality of life remained regular, with a small score reduction of 3.1 in the first cycle to 3.0 in the third cycle. The issue of health satisfaction was assessed as bad, as the result was 2.8 in the first cycle and 2.7 in the 3rd cycle. For both issues, the differences were not statistically significant between cycles (Table 2).

Table 2 - Scores obtained in WHOQOL- bref in patients using a device for continuous infusion of antineoplastic between cycles (n=28). Fortaleza, 2013.

WHOQOL- -bref Domains	Mean (dp)	Mean CI95%	p-valor*
1: Life quality perception			
First cicle	3,1 (0,8)	(2,7 - 3,4)	0,317
Third cicle	3,0 (0,8)	(2,7 - 3,3)	
2: Health satisfaction			
First cicle	2,8 (0,7)	(2,5 - 3,0)	0,157
Third cicle	2,7 (0,6)	(2,5 - 2,9)	
Domain 1: Physical			
First cicle	3,2 (0,5)	(3,0 - 3,4)	0,006
Third cicle	3,1 (0,5)	(2,9 - 3,3)	
Domain 2: Psychological			
First cicle	3,1 (0,3)	(3,0 - 3,2)	0,219
Third cicle	3,0 (0,3)	(2,9 - 3,2)	
Domain 3: Social Relations			
First cicle	3,5 (0,3)	(3,4 - 3,6)	0,317
Third cicle	3,5 (0,3)	(3,4 - 3,6)	
Domain 4: Environment			
First cicle	3,5 (0,2)	(3,4 - 3,6)	0,015
Third cicle	3,4 (0,2)	(3,4 - 3,5)	

Source: Author. Note:*Wilcoxon averages equality test for paired data.

As regards the domains, it was observed that the highest average and the lowest variability in responses (lower standard deviation and lower amplitude range) were the social relations, remaining unchanged in both cycles, averag-

Table 1 - Cronbach's alpha coefficient of the WHOQOL-bref domains in patients using a device for continuous infusion of antineoplastic in the first and third application cycle (n=28). Fortaleza, 2013.

WHOQOL-bref Domains	Cronbach's alpha coefficient of responses to items*	
	1st cicle (n=28)	3rd cicle (n=28)
Domain 1: Physical	0,79	0,81
Domain 2: Psychological	0,81	0,83
Domain 3: Social Relations	0,88	0,89
Domain 4: Environment	0,89	0,9
Global Cronbach's alpha (24 items)	0,88	0,89

Source: Author. Note:*Cronbach's alpha coefficient obtained with the withdrawal of the respective domain items.

ing 3.5, with standard deviation 0.3. There were statistically significant differences between the cycles for the physical domain (p-value = 0.006), and environment (p-value = 0.015) (Table 2).

The predominant pattern of responses in all domains, as well as the overall evaluation of the quality of life items, was seen as regular in both the antineoplastic application cycles. In relation to the perception of the quality of life, ten (35.7%) responses in the first cycle presented percentages varying between “good” and “regular”. A similar result was seen in the third cycle, in which eleven patients (39.3%) considered the quality of life “regular”, and nine patients (32.1%) classified it as “good”. The differences were not statistically significant in terms of the perception of the group on the quality of life in different times of antineoplastic application. In the item “health satisfaction”, there was a predominance of patients who classified it as regular in both the first cycle (15-50%) and the third cycle (16 to 57.2%), noting a slight increase in cases of good to regulate (two - 7.1%) in the latter (table 3).

The most affected domains were the physical and the psychological because, in the first place, patients evaluated them as regular both in the first cycle (18 - 64.3%) and the third (from 17 to 60.8%). It is noteworthy that eight (28.6%) considered that this area was poor in the first round and nine (32.1%) in the third cycles. Only two patients (7.1%) expressed the evaluation as good for both cycles. As for the psychological domain, 21 patients (75%) rated it as regular in the first cycle, and 19 patients (67.9%) in the third cycle. Seven patients (25%) assessed this domain as bad in the first cycle, a proportion that widened to nine (32.1%) in the third cycle.

The most preserved domains were those of social relations and environment, being that 25 patients (89.3%) rated it as fair in both cycles in the first place, while none of the assessments

classified it as bad in either of the antineoplastic application cycles. The same results occurred for the domain environment, with less variability in terms of evaluation, being that 26 patients (92.9%) rated it as regular in the first cycle and 28 patients (100%) in the third.

Table 3. Proportional distribution of the domains of the evaluation instrument of WHO-QOL- bref quality of life in patients using a device for continuous infusion of antineoplastic, in the first and third cycle of the antineoplastic treatment (n=28). Fortaleza, 2013.

WHOQOL- -bref Do- mains	Treatment using antineoplastic		p-valor*
	1st cycle (n=28) n (%)	3rd cycle (n=28) n (%)	
1: Life quality perception			
Poor	8 (28,6)	8 (28,6)	0,86
Regular	10 (35,7)	11 (39,3)	
Good	10 (35,7)	09 (32,1)	
Very good	0 (0,0)	0 (0,0)	
2: Health satisfaction			
Poor	10 (35,7)	10 (35,7)	0,74
Regular	14 (50,0)	16 (57,2)	
Good	4 (14,3)	2 (7,1)	
Very good	0 (0,0)	0 (0,0)	
Domain 1: Physical			
Poor	8 (28,6)	9 (32,1)	0,8
Regular	18 (64,3)	17 (60,8)	
Good	2 (7,1)	2 (7,1)	
Very good	0 (0,0)	0 (0,0)	
Domain 2: Psychological			
Poor	7 (25,0)	9 (32,1)	0,56
Regular	21 (75,0)	19 (67,9)	
Good	0 (0,0)	0 (0,0)	
Very good	0 (0,0)	0 (0,0)	
Domain 3: Social Relations			
Bad	0 (0,0)	0 (0,0)	1
Regular	25 (89,3)	25 (89,3)	
Good	3 (10,7)	3 (10,7)	
Very good	0 (0,0)	0 (0,0)	
Domain 4: Environment			
Poor	0 (0,0)	0 (0,0)	0,15

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Regular	26 (92,9)	28 (100,0)
Good	2 (7,1)	0 (0,0)
Very good	0 (0,0)	0 (0,0)

Source: Author. Note: * Chi-square test for linear trend.

DISCUSSION

Data analysis allows us to understand the prevalence of colon and rectal cancer in married women who were aged 51 and 60 years. This result is similar to a study conducted in Campinas/SP, which evaluated the quality of life of patients suffering from cancer in the period of chemotherapy with antineoplastic. This study showed that the most frequent type of cancer was the large intestine, affecting the age group of 51-70 years, exposing the high occurrence of this type of cancer tumor. On the other hand, it differs from this study and the other carried out in Teresina/PI regarding gender, where the most affected individuals were men^(9,10).

Regarding the diagnosis time, there was equality amongst those with less than six months and over 18 months of diagnosis of the disease (35.7% each), with the occurrence of metastasis (53.6%). Most patients underwent treatment combining antineoplastic therapy and surgical intervention, where the most frequent surgery was colectomy. Such events reflect the findings of a recent study conducted in Ribeirão Preto/SP, where most of the patients had metastasis and surgical intervention was performed as part of the treatment⁽¹¹⁾.

Regarding the antineoplastic treatment, our study identified the protocols that were a combination of the following drugs: oxaliplatin, fluorouracil, irinotecan, bevacizumab, capecitabine, epirubicin and folinic acid. However, the medication used in all the protocols was fluorouracil. The benefits of antineoplastic chemotherapy for cancer of the colon and rectum,

whether palliative or curative, are more evident with regimens that include oxaliplatin in combination with fluorouracil, and with capecitabine and oxaliplatin^(12,13).

The gastrointestinal side effects, such as nausea, vomiting, diarrhea and mucositis were the predominant ones. The drugs oxaliplatin, irinotecan and fluorouracil, used in the sample, presented moderate potential for the occurrence of emetogenic factors⁽¹⁴⁾.

Patients also reported insomnia, sadness and malaise. The presence of side effects can influence not only the physical domain, but also the psychological one. Participants evaluated positively the overall measures of quality of life; however, they were not satisfied with their own health condition. Here, the item perception of quality of life was better evaluated in relation to the item health satisfaction, a result probably explained by the impact of the treatment of the disease with their side effects. A recent study involving patients undergoing antineoplastic treatment corroborates the findings of this research, being that it shows that most of the patients had high rates of anxiety and depression⁽¹⁵⁾, events which certainly affect the quality of life negatively.

Although the use of the continuous infusion device is seen as a positive point in the treatment for cancer patients, it offers some autonomy, allows patients to return home and reduces the dependence of the health service. However, it can generate other effects on a daily basis that can have a negative impact on the perception of health.

A recent study evaluating the quality of life of patients with colorectal cancer undergoing antineoplastic treatment showed that patients had a higher average in relation to the perception of their quality of life than for health satisfaction⁽¹⁶⁾.

Before the administration of the antineoplastic therapy by a portable infusion pump,

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all the patients underwent the fully indwelling catheter insertion procedure. This intervention seems to have had an impact on the patient's perception of health because there is a technological apparatus in their bodies. However, this can lead to doubts and uncertainty about its use, so constituting a constant reminder that their health condition requires care. Another study discusses the perception of cancer patients bearing long term catheter showed that, in regard to the procedure, individuals considered the treatment long, painful and traumatic⁽¹⁷⁾.

A study that evaluated the quality of life of patients suffering from colorectal cancer in outpatient chemotherapy⁽¹⁶⁾ showed the lowest average in the psychological domain, with a higher average in the domain of social relations. This response was found in the different moments of application of the antineoplastic, showing no significant changes between the initiation of therapy and subsequent cycles.

In the proportional distribution, the physical and psychological domains were evaluated negatively by patients, either in the first or in the third antineoplastic administration cycle. The domains of social relations and environment had more favorable assessment in both cycles. As for the physical domain, this result may be due to the occurrence of the undesirable effects of the treatment, which makes the patients feel physically affected, particularly when they have experienced side effects. We can add to the result changes to the items evaluated by this domain, those which are compromised by the disease, such as the ability to go places and to work, the development of activities of daily living, pain, discomfort, fatigue, as well as medication dependency and treatments. These are aspects that can generate a negative influence, including the need to undergo invasive procedures such as the implantation of catheters and the use of an infusion device.

These changes are reflected in the assessment of the psychological domain of the instrument for assessing quality of life (WHO-QOL-BREF), being that the following aspects are encompassed: positive feelings, thinking, learning, memory and concentration, self-esteem, body image and appearance, negative feelings, spirituality, religion and personal beliefs⁽⁷⁾.

The self-image and self-esteem of patients who need to use a device for infusion of antineoplastic drugs over a prolonged period of treatment can be adversely affected. This is because having a technological apparatus coupled to body requires the subjects to adjust their whole routine to the moments in which they find themselves in this condition. Even though patients know it will be to their benefit, the changes and impositions can generate personal conflicts, resistance, acceptance difficulty and natural moments of instability in every individual.

The study so described patient's perception regarding the use of a continuous infusion device for antineoplastic administration, showing that their lived experience raises many feelings and individual perceptions often permeated by anxiety, fear of the unknown, insecurity and doubt⁽¹⁸⁾.

At this moment of emotional, physical and spiritual instability, family and friends are the greatest support that a patient stricken by cancer can present, reinforcing the results of this study, whose highest average domain was that of social relations; moreover, it should be noted that it consists of personal relationships, social support, and sexual activity⁽⁷⁾.

The use of continuous infusion devices favors patients undergoing antineoplastic therapy demonstrate that this technology prevents hospitalization time, showing that patients feel better for being able to go home, sleep in their beds and be close to their family members, which are all positive aspects to the treatment⁽¹⁸⁾.

The preference for remaining in the home environment was also emphasized in another study. Although patients receive a good hospital care, they prefer the warmth of their houses, where they find peace and rest, which are difficult to maintain when they are hospitalized.

The use of this technology cannot be seen in isolation when assessing the quality of life of cancer patients. However, it is assumed that this tends to favor some determinants of quality of life; such as, independence, physical security, home environment, possibility of access to information, recreation and leisure, and the possibility of maintaining social relationships. These are all aspects that are important for the maintenance of health and preservation of quality of life.

For nursing, it is essential to have extensive knowledge of the factors that influence the quality of life of cancer patients positively or negatively, being that it allows the planning of interventions for the health promotion of these patients. This is an important role to be played, not only by nursing, but also by all professionals working in oncological care. Thus, the evaluation of the quality of life of cancer patients, one using a continuous infusion device for the antineoplastic administration, will provide increased knowledge and consequent improvement in nursing care to these patients. Thus, understanding the role of a multi-professional team that assists patients with this device can contribute to the qualification of assistance and the relief of suffering in all its dimensions, so enhancing the level of human integrity.

The limitations of this study are related to the number of subjects and place – including a single service provider – thus forcing the findings to be generalized. However, these limitations are considered valid, being that they refer to two different times (the first and third cycles of

treatment) while, in special circumstances, the oncologic patients also use the device for continuous infusion of antineoplastic. As for the service provider, it is worth noting that it is one of the largest companies in the north and northeast.

CONCLUSIONS

The findings show that the disease of cancer affects patients in many dimensions. Several factors combine the influence of the assessment and perception of quality of life - such as diagnosis, age, gender, the treatments and procedures performed as well as their unwanted effects - with the use of technologies, such as the continuous infusion device. It is therefore not possible to consider that there is any isolated factor to influence positively or negatively the quality of life of cancer patients. It is important to know what the determining factors are in this sense, in order to be able to devise strategies to preserve the quality of life of these patients.

In regard to the use of the continuous infusion device for antineoplastic administration, it was possible to understand that this technology favors aspects related to independence; the possibility of returning home, the performance of daily life activities and labor, all of which are fundamental to maintaining the well-being and quality of life of patients. These aspects are related to the facets of the domains that were better evaluated by the study group; namely, social relations and environment. However, patients are not free from negative aspects, such as fear of the unknown, the presence of a device in their daily lives and discomfort regarding their movement. These are related to the facets with the worst evaluation in relation to the physical and psychological domains.

Therefore, there is a need for further studies to compare the quality of life of cancer patients undergoing treatment with antineoplastic

agents with and without the use of continuous infusion devices. Their objective would then be to promote the acquisition of knowledge in terms of the quality of life for these patients.

It is hence valid to conclude that investigating the quality of life of cancer patients using devices for antineoplastic infusion is a strategy that has enabled the expansion of knowledge regarding the problems faced by them. It thus offers patients support so that the nursing area may promote actions and conditions aimed at improving quality of life.

REFERENCES

1. Instituto Nacional do Câncer (Brasil). Coordenação de Prevenção e Vigilância. Estimativa 2016: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2015.
2. Instituto Nacional do Câncer (Brasil). Coordenação de Educação. ABC do câncer: abordagens básicas para o controle do câncer. 2. ed. Rio de Janeiro : INCA; 2012.
3. Bonassa EMA, Gato M. Terapêutica oncológica para enfermeiros e farmacêuticos. 4.ed. São Paulo: Atheneu; 2012.
4. McLachlan SA, Fisher RJ, Zalberg J, Solomon M, Burmeister B, Goldstein D et al. The impact on health-related quality of life in the first 12 months: A randomised comparison of preoperative short-course radiation versus long-course chemoradiation for T3 rectal cancer (Trans-Tasman Radiation Oncology Group Trial 01.04). *Eur J Cancer* 2016; 55: 15-26.
5. Feuerstein MA, Jacobs M, Bochner B, Pusic A, Fayers P, Blazeby J et al. Quality of life and symptom assessment in randomized clinical trials of bladder cancer: A systematic review. *Urologic Oncology: Seminars and Original Investigations*. 2015 July; 33 (7): 331.e17–331.e23.
6. Lam KKW, Li WHC, Chiu SY, Chan GCF. The impact of cancer and its treatment on physical activity levels and quality of life among young Hong Kong Chinese cancer patients. *European Journal of Oncology Nursing*. 2016; 21: 83-89.
7. Fleck MPA, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida “WHOQOL-bref”. *Rev. Saúde Pública*. 2000 Abr; 34(2):178-83.
8. Mansano-Schlosser TC, Ceolim MF. Quality of life of cancer patients during the chemotherapy period. *Texto contexto - enferm*. [Internet]. 2012 Sep [cited 2015 Jun 27]; 21(3):600-607. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072012000300015&lng=en. <http://dx.doi.org/10.1590/S0104-07072012000300015>.
9. Rego AGS, Borges ICV, Valença RJV, Teles JBM, Pinto LSS. Câncer colorretal em pacientes jovens. *Rev Bras Cancerol*. 2012; 58(2):173-80.
10. Loi TL, He HG, Chan WCS, Wong RK, Tang CL. Factors predicting health-related quality of life of patients with colorectal cancer one year after surgery. *Psycho-oncology*. 2014 Oct; 23(Suppl 3):391-392
11. Toneti, BF, Paula, JM, Nicolussi AC, Sawada NO. Health-related quality of life of the elderly with cancer in adjuvant treatment. *Rev Rene*. 2014 Nov-Dec; 15(6):1030-8.
12. Hong TS et al. NRG Oncology Radiation Therapy Oncology Group 0822: A Phase 2 Study of Preoperative Chemoradiation Therapy Using Intensity Modulated Radiation Therapy in Combination With Capecitabine and Oxaliplatin for Patients With Locally Advanced Rectal Cancer. *International Journal of Radiation Oncology* Biology* Physics*. 2015; 93 (1): 29–36.
13. O’Connell MJ, Colangelo LH, Beart RW, Petrelli NJ, Allegra CJ, Sharif S’Connel MJ et al. Capecitabine and oxaliplatin in the preoperative multimodality treatment of rectal cancer: surgical end points from National Surgical Adjuvant Breast and Bowel Project trial R-04. *J Clin Oncol*. 2014 Jun; 32(18):1927-34.
14. Almeida, RGL; Pontes, ACAA; Cardoso, DA; Carreira, JS; Sousa, MS; Maia, CSF. O Manejo da Êmese em uma Unidade Oncológica: a Necessidade da Intervenção Farmacêutica em Tempo Real. *Ver. Bras. Cancerol*. 2015; 61(2): 115-121.
15. Kawakami DM, Olah SL, Pivetta NRS, Silva RCR, Santos DCN, Napoleão L et al. Avaliação da ansiedade e depressão de pacientes oncológicos

que realizam quimioterapia ambulatorial. *Colloq Vitae*. 2014 Sept-Dec ; 6(3): 35-41.

16. Odom D, Barber B, Bennett L, Peeters M, Zhao Z, Kaye J et al. Health-related quality of life and colorectal cancer-specific symptoms in patients with chemotherapy-refractory metastatic disease treated with panitumumab. *International J Colorectal Dis*, 2011; 26(2):173-181.
17. Siqueira JF, Silva DMA, Oliveira FJG, Caetano JA, Campos FA, Camurça MNS. Utilização de dispositivo para infusão contínua de quimioterápico na visão do paciente oncológico. *Rev Rene*. 2013; 14(6): 1217-23.
18. Brondani CM, Margrid B, Alvim NAT, Szareski C, Rocha LS. Caregivers and strategies for home care patients. *Texto Contexto Enferm* [Internet]. 2010 Sep [cited 2015 jun 21]; 19(3): 204-10. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072010000300012&lng=en. <http://dx.doi.org/10.1590/S0104-07072010000300012>.

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