

Training needs of nurses practicing in Algerian oncology departments

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Received: 13/10/2022

Accepted: 29/11/2022

Published:15/04/2023

Abstract:

Background: Improving the expected outcomes of cancer plan 2015-2019 depends on upgrading skills, especially the human ones at all stages of the chain of care through training.

Aims: The research contents are based on the following specific objectives, assess the current situation of nurse training at the level of Algerian oncology departments; define training needs of Algerian oncology nurses and suggestions of training.

Methods: This is a descriptive qualitative, grounded theory research utilizing semi-structured interview model to investigate the overall knowledge among Algerian nurses based on their roles, tasks, training needs, and training suggestions. The sample included 16 nurses working in different hospitals with more than five years of experience and met the inclusion criteria. The interview content was recorded then transcribed into text materials. Data collection and analysis were carried out simultaneously; the Nvivo was used to code data and refine the theme.

Conclusion: All participating nurses expressed their need to be trained in oncology.

Keywords: cancer plan 2015-2019; oncology nurse; training; training needs; work content.

Introduction

1.1 Background

Cancer constitutes a major public health burden and challenge worldwide. According to the World Health Organization (WHO), one in six deaths in the world is due to cancer and 8.8 million of deaths were recorded in 2015 (Cancer, 2021). Moreover, the number of new cancer cases is projected to increase 15 million per year by 2020 (2. Frankish, 2003). Algeria has been facing demographic transition during the last few decades and a significant change in population lifestyle leading to an increase of cancer incidence (45 000 new cases of cancer per year) and death with 24 000 deaths in 2014 (plan national cancer, 2015-2019). The implementation of the national cancer plan (NCP) 2015-2019 has showed a real political will resulted in large investments made for the health promotion and fighting against this pathology, in terms of, infrastructure, equipment and human resources [3]. The NCP was based on eight axes by the impulsion of a new strategy that put the patient at the heart of the management. Training HCP represents the key element of this plan that leads to the improvement of human skills and achievement of expected outcomes. The role of HCP, including oncology nurses is fundamental in treating cancer patients and supporting the life of cancer survivors (Hayashi, K, S, I, T, K, 2006). Nurses represent a vital resource for cancer patients and their families whose responsibilities extend across the continuum of cancer care, requiring specialized training and support (Esplen, W, G, R, & L, 2018). Training plays a key role in the development of knowledge in oncology nursing, throughout educational activities based on learning needs (Cohen, 1995). Nurses are expected to provide safe, competent and effective interventions for people with cancer throughout the illness and to provide quality care for cancer patients. The optimal delivery of nursing care in oncology is directly related to a constant adaptation to these changes through the expansion of their current role and the creation of new tasks (Gaguski, George, 2017) Some authors have shown the need for training and specialization of nurses in oncology (Glasgow & Dreher, 2010) Other studies have examined the issues experienced by nurses when administering cancer treatment and the difficulties in which are found the novice nurses in oncology departments (Cook & Recoche, 2015) (Matsumoto, Kamibeppu, 2011). However, further studies carried out on the needs of continuing education of nurses on the development of skills in communication with the patient and their family, pain management, support for end-of-life patients, bereavement management, oncology patient reception (Soheili & Taleghani, 2021) (Ling & Yu, 2021). Although, occupational exposure to anticancer agents may result in carcinogenic, mutagenic and teratogenic effects and many of them can be detectable in body fluids (Sorsa & Anderson, 1996) (Lim & Waller, 2016) requiring specific and continuous nurses training (Falcu & Pillière, 2007) (Lawson & Rich-Edwards, 2012). Research showed that nurses need additional training sessions to provide excellent psychosocial care and support to patients (Chen & Raingruber, 2014) (Turner & Hausmann, 2007).

Nurses practicing oncology must identify the challenges inherent in oncology nursing and how they can develop their knowledge. Training plays a key-role in the development of knowledge in oncology nursing through educational activities based on learning needs. Hence a better understanding of the meaning of oncology nursing could provide additional information that can help identify strategies that nurses can use to get resources to meet

their own needs and therefore they can provide better nursing care (Cohen, 1995). Therefore, it is urgent to align the training system with the requirements of the health system, to facilitate the transition between formal academic systems and care structures, and to inculcate a philosophy of lifelong learning (Esplen & Li, 2018).

The improvement of the expected results of this plan depends on the upgrading of skills and human skills at all stages of the chain of care through training. The NCP expresses the awareness of the Algerian Ministry of health that the training axis is the lever of change and that the objectives assigned to all other axes can only be achieved if they are all linked to this axis (training). In this context, the training of nurses must be reinforced and adapted, taking into consideration the specific needs that have emerged in the field of oncology and that require the creation or evolution of certain health professions (plan national cancer, 2015-2019).

However, the current situation of the initial training program for Algerian nurses provides a mandatory contribution to the care of cancer patients. The program prepares the learners for practice but does not develop the specialized skills required for the quality of the patients care. Nurses need to be well trained on how care should be changed in light of new treatment modalities, as well as innovative ways to improve the quality and safety of cancer care (Soheili, & Taleghani, 2021). In counterpart, the NCP provides for better accessibility to continuing education in oncology. Unfortunately, till today nothing specific or concrete has been undertaken on that concern.

1.3 Purposes and Significance

1.3.1 Purposes

This descriptive qualitative, grounded theory research used individual in-depth interviews to facilitate data gathering related to the actual practices of nurses in oncology department and the corresponding oncology nurses' education. The research contents are based on these specific objectives, a.) Investigate the work content, difficulties and barriers of Algeria oncology nurses encountered during their tasks ; b.) Investigate the current situation of nurses' training at the level of oncology department; c.) Defining training needs of Algeria oncology nurses and on the basis of a suitable training program;

1.3.3 Significance

The current study will help to assess existing knowledge, determine deficiencies, and define practices related to oncology nursing. Furthermore, ongoing educational needs are also taken into consideration to ensure the maintenance of an appropriate nurses in the field. Knowing that continued medical education (CME) in our country is weak. Data collected and outcomes obtained, during the research process, will guide to formulate specific recommendations. These recommendations will contribute to the NCP framework and support an appropriate pedagogical project that takes into account all the intentions contained in the axes and lead to operational objectives.

2. Subjects and methods

2.1 Subjects

Participants were recruited from the list of hospitals' employees who are actively practicing in oncology department or directly dealing with cancer patients. Hence, best qualifications and work experience in the field of nursing care in oncology, constituted the most selection criteria.

Inclusion criteria: a.) nurses practicing at the level of oncology management department of the three hospitals; b.) with more than five years experience; c) nurses providing direct care or management to cancer patients; d) nurses well communicating; e) and nurses accepting to participate in the study with an informed consent.

Non-inclusion criteria: a) nurses not practicing in oncology departments; b.) less or non-experienced nurses.

2.2 Methods

2.2.1 Study Design

This is a descriptive study, using semi-structured interview aiming to investigate the knowledge of nurses practicing in oncology departments.

2.2.2 Sampling technique

The sampling technique whereby a combination of destination sampling and snowball sampling were used, until there is no new content, that is, the information is saturated. The purpose of this technique is to extract individuals, places, and events that can provide the maximum amount of information for research questions. Moreover, it considers factors that are important to the research question during the sampling process. Rolling snowball sampling is used to select limited and appropriate participants who meet the required conditions to conduct research.

The main purpose of using a target sample was to focus on the particular characteristics of oncology nurses as bearers of in-depth knowledge necessary to enable the researcher to address the research questions. This homogeneous sample will allow to answer the research questions. Nurses working with cancer patients for the current study were sharing identical characteristics or traits.

2.2.3 Preparation prior the interview

Prior undergoing interview, a large amount of literature was consulted to well conduct, define, and formulate interview outlines. Aiming to avoid any confusion and subjectivity during interview sessions, the investigator was accompanied by an assistant.

2.2.4 Research setting

The study was conducted in three hospitals where the participants are working, with one to one interview.

2.2.5 Data collection method

Prior the interview, the participants were informed about our research background and the purpose of the study. Two organizing members collected data and one assistant member was engaged to notice emotion and language attitude of the participants.

A series of questions were listed in the outline. However, the order and the specific formulation were adjusted according to the actual situation.

The interview started when all interviewees signed a consent form. During 30-40 minutes, the key statements, the tone and the expression of the interviewee, were recorded. The interview started with an open question “Please talk about your views on the development of oncology nurses in Algeria”, then the following question according to the interview outline. On the basis of the consent of the research object, the researcher recorded the interview consent during the interview.

Once the interview is over, the researcher transcribed the recording verbatim into textual materials, and draft down the data on a Microsoft Word document within 24 hours.

2.2.6 Data analysis

Data collection and analysis were performed simultaneously. After transcribing the recording verbatim into textual materials, the **Nvivo** program was utilized to code data and refine the theme.

Textual data analysis requires two researchers with the aim to reduce the impact of subjective thoughts on research results.

3. Results

3.1 General information

Sixteen (16) nurses were involved in this study. Six (6) (37.5%) from hematology department, 2 (12.5%) from oncology department and 8 (50%) from Algerian anti-cancer center (CAC). All nurses are bachelor’s degree, and include seven (7) (43.75%) men and 9 (56.25%) women. Two (2) (12.5%) are nurse managers, two 2 (12.5%) head nurses, and 12 (75%) nurses. The average age was 35.73 years with a minimum of 25 and a maximum of 51 years. The work experience in oncology department was about 8.93 years, ranged between 6 to 22 years. Table 1 summarizes the demographic characteristics of the participants.

Table 1. Demographic characteristics of the participating nurses (n = 16)

M: men; W: women

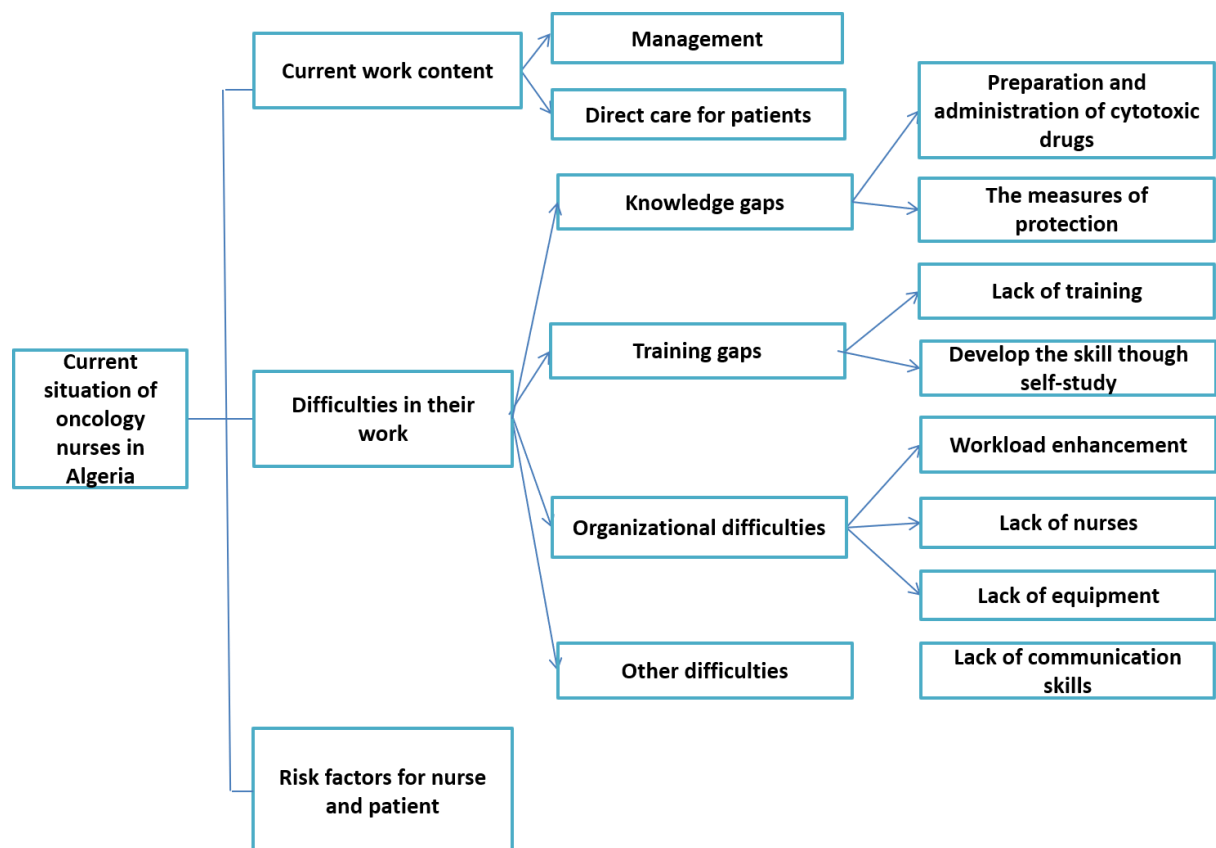
Age (years)	Gender	Work Position	Education level	Work unit	Work experience
51	M	Nurse manager	Bachelor’s degree	Hematology	12
28	W	Public health nurse	Bachelor’s degree	Hematology	7
51	M	Nurse manager	Bachelor’s degree	Hematology	22
48	M	Head nurse	Bachelor’s degree	Hematology	6
25	W	Public health nurse	Bachelor’s degree	Hematology	6
50	M	Public health nurse	Bachelor’s degree	Hematology	20
26	W	Public health nurse Public health	Bachelor’s degree	Anti cancer center	6
28	W	nurse	Bachelor’s degree	Anti cancer center	7

26	W	Public health nurse	Bachelor's degree	Oncology	6
45	W	Public health nurse	Bachelor's degree	Oncology	7
28	M	Public health nurse	Bachelor's degree	Anti cancer center	7
26	M	Head nurse	degree Bachelor's degree	Anticancer center	6
50	M	Public health nurse	Bachelor's degree Bachelor's	Anti cancer center	10
28	W	Public health nurse	degree Bachelor's degree	Anti cancer center	6
25	W	Public health nurse		Anti cancer center	6
26	W	Public health nurse		Anti cancer center	6

3.2 Current situation of nurses

3.2.1 Current work content

Figure 1. Current situation of oncology nurses in Algeria



Our results show that more than half of the nurses were assigned to work with cancer patients on the basis of their choice and wishes. Interviewee 4 said “*I chose to work in Anti Cancer Center (CAC)*”, interviewee 9 said “*I was appointed to oncology department according to my choice*”. While, the rest of the nurses were automatically appointed to the oncology department by necessity. Interviewee 3 said “*I was appointed to the oncology department regardless my willingness*”, when interviewee 8 said “*I was among the first nurses being appointed in the department by necessity just after its inauguration*”.

There were two categories of nurses practicing in the oncology department in this study.

a. Manager nurses

There were two head and two manager nurses. Their duties consist of supervising, planning and coordinating all activities between nurses and doctors within the oncology unit and the

central pharmacy. Furthermore, these nurses assist and supervise the other nurses during the execution of their tasks teaching them good practices to avoid professional misconducts.

Interviewee 1 said *“I am the nurse manager. I coach nurses and all caregivers and I manage and organize the department”*.

Interviewee 3 said *“I was a nurse in charge of hematology. I was on guard duty. I did nursing for the sick since 2013. Actually, I am coordinating all activities between nurses themselves and between nurses and doctors. I am following procedures for acquiring drugs (only antimetabolites) between doctors and the central pharmacy with the nursing staff”*.

Interviewee 4 said *“I am a health executive nurse and I do supervision for all nurses staff”*.

b. Direct care for patients

For the reception of patients. Interviewee 8 said *“When receiving patients, I well prepare them psychologically since most of them are deeply affected because of the disease.”*

Concerning patients' care, all the interviewee provide basic cancer care support, including injections, transfusions, hyper-hydration regimens, blood sampling, antiemetic prior chemotherapy to avoid digestive side-effects following chemo- or radiotherapy. Additionally, chemotherapy requires taking into consideration some vital parameters such as: temperature, pulse, blood sugar, etc.

Concerning psychological support for patients during treatment. Interviewee 9 said *“..The psychological support is crucial prior undergoing any treatment, personally I prepare well my patients, I offer them the hope to heal by providing vivid examples of some previous cases of patients having identical type of cancer that were cured and succeeded”* ,

Additionally to oncology care, some special cases can include the repair of dressings, such as ostomate patients, intimate bath for bedridden patients. Interviewee 13 said *“...I do palliative cure for pain management and rehydration.”*

3.2.2 Nurses work difficulties

Three major difficulties have been noticed in the investigated nurses: a) knowledge gaps; b) Training gaps; c) organizational difficulties. Minor difficulties were the lack of communication skills with patients, lack of time, and life stresses.

a. Knowledge gaps

This was the most discussed category by the interviewed nurses. There were specific activities and difficulties encountered by the nursing staff when providing care. However, nurses displayed difficulties in caring patients because lack of knowledge related to oncology field. Most nurses experienced difficulties at work because of their shortcomings in specific theoretical and clinical knowledge.

- **Preparation and administration of cytotoxic drugs:** Interviewee 2 said *“...my knowledge gaps concern practice and care in oncology.”* Interviewee 9 said *“Knowledge gaps, shortcomings in theoretical and practices knowledge”*. Interviewee 10 said *“I do not have enough knowledge in practical oncology.”* Interviewee 12 said *“During my career, my concern was on how to handle antimetabolites and take care of oncology patients.”*

- **Precaution measures:** Most nurses are not familiar with certain ways to protect themselves and others against toxicity risks of chemotherapy. They are worry about being exposed to the side effects of chemotherapy. Interviewee 7 said *"There is a high risk especially when neglecting protective measures and ignoring how to handle correctly any toxic product."* The majority of nurses reported that their hospitals have the necessary equipment for the management of health care waste, including cytotoxic drugs. Unfortunately, these procedures are not appropriately followed.

b. Training gaps

- **Lack of training:** This category refers to the difficulties related to the lack of CME of nurses in the field of oncology. Nurses should rather be updated with new developments in the field of oncology, on therapeutic protocols, drugs and symptoms and other related procedures. According to interviews, the majority of nurses confirmed that they did not benefit from a specific training sessions in oncology. Nurses who were trained found that these trainings were really limited since they concerned some notions about antineoplastic, and did not exactly fit their needs. Such nurses deserve additional training to provide excellent oncology care. Interviewee 11 said *"I have never had any training either in the hospital or outside."* Interviewee 12 also said *"I developed my skills in the workplace via unique self-training!! I have never received any training during this period neither in the hospital nor outside the hospital."* Interviewee 13 said *"I did not have the chance to be trained in oncology neither at the hospital nor outside the hospital."*
- **Skills development through self-education:** This research showed that the lack of CME in oncology has led most nurses to develop their skills with former colleagues, doctors and patients. However, some nurses found that such kind of training is not reliable because the quality of collected information that could be erroneous from online sources, articles, videos, etc.).

Interviewee 2 said *"I developed my skills by working with patients and old colleagues."* Interviewee said 3 *"Through experience that allowed us to develop our skills. In another word, difficulties I encountered during my practice pushed me to develop my own skills."* Interviewee 4 said *"It is through self-education and in the field on the job."*

c. Organizational difficulties in work

- **Heavy workload :** Nursing staff provided patients with care, such as preparation, administration of chemotherapy; monitoring of vital signs, reporting adverse effects to the health care team and physicians; blood sampling and other complementary biological and radiological tasks. These tasks put nurses under pressure due to the high number of cancer patients. As a result, most of the nurses feel moderately satisfied because not providing necessary time for all patients and being unable to satisfy their needs.

Interviewee 2 said: *"The number of patients exceeds the threshold that makes our mission difficult to manage."* Interviewee 3 said: *"Further to workload, administration of chemotherapy, the palliative care is added. Considering also other patients who do not have cancer."*

- **Lack of nurses:** This concern constitutes an additional issue, and participants pointed out that they are constantly busy because of the large number of patients receiving chemotherapy during the daylight. Long waiting period during the procedure of obtaining medicines from the central pharmacy and initiating the preparation and administration of chemotherapy constitutes another issue. Interviewee 3 said: *"The main issue is the waist of time between the central pharmacy and our department. Furthermore, preparation of medication disrupts our work and stress our patients because most of them come from far regions (300 to 500 km).*

The lack of space represents also another issue to consider.” Interviewee 16 said: “An organizational issue are : the number of patients is raising very fast compared to the number of available nurses that makes our mission very difficult.”

- **Lack of equipment:** Interviewee 15 and 7 both said: *“The Waist of time to bring medicines could disturb the patients and even the nursing staff and the lack of equipment too.”* Interviewee 13 also said: *“Medicines’ shortage is really an issue.”* Interviewee 5 said: *“Lack of some products.”*

d. Other difficulties

- **Lack of communication skills:** Some nurses still find difficulties of communication with cancer patients especially the sensitive ones on how to better address their psychosocial needs. Nurses have difficulty taking care patients who do not know they have cancer and the progression of their disease. However, most nurses were invited to communicate and provide information about treatments and their side effects, risks, etc. Unfortunately, they did not feel qualified to perform this task easily because of the lack of communication skills with patients. Interviewee 5 said *“I do not know how to communicate and behave with patients.”* Interviewee 9 said *“I do not know how to communicate with patients and their families, often concerning sensitive information; there are times when it is difficult especially when the patient ignores. As a result, some patients do not cooperate with us”.* Interviewee 2 said *“I am facing serious issues related to the psychology of patients, especially those who do not accept their disease. In some situations, patients do not know at all during the stay if they will be treated chemically or not and that will make our task more complicated.”*

3.2.3 Risk factors for nurses and patients

Participating nurses noted that there is a high risk for patients to be managed by newly recruited nurses who did not have sufficient experience and knowledge. Some patients put up resistance against those newly nurses and even refuse to be injected by them.

- **Insufficiency in clinical knowledge:** Interviewee 16 said *“The risk is evident for me, especially the fact that I was directly affected in this department. This constitutes a high risk for me and even for patients because some lack in knowledge on the disease and on the use of antimitotics. During my three-year of training, the time dedicated to oncology module was limited. The reason for what I do believe that specializing nurses in this field would be much better.”* Interviewee 10 said *“There is a risk if nurses do not have enough specialized oncology skills! Hence, working in oncology requires sufficient specialized training.”* Interviewee 3 said *“The risk is high if nurses do not know how to administer or handle the antimitotics and their side-effects. If nurses do not know how to place a peripheral catheter that may cause an extravasation issue. For that reason, I confirm the specialization training.”* Interviewee 9 confirmed *“The risk is of course high! If nurses do not have specialized skills, working with cancer patients become stressful especially for those who are newly recruited; How can they manage their work-related stress? How should they correctly take a cancer patient?”*

- **Insufficiency in specialized skills:** Interviewee 15 said *“The risk exists. If nurses ignore protective measures, and do not know how to handle a toxic product. How to behave with a cancer patient? Knowing that cancer patients are fragile and sensitive who require specific attention from experienced nurses.”* Interviewee 11 said *“The risk is high if the nurses do not have the required knowledge and appropriate skills to work in the oncology department. Example in our department there have been several cases of extravasation among our patients. Some of*

theme were even burned by chemotherapy after a bad insertion of a peripheral catheter! Oncology requires acquisition of specific and enough knowledge.” Interviewee 14 said “I find normal for being at risk, especially when nurses are not well trained and do not have the required knowledge in oncology.”

3.3 Current situation of training program for Algerian nurses

The training of Algerian nurses in public health is planned for three years aiming to acquire necessary skills, knowledge, experience, attitudes and behaviors to meet health patients’ needs within a multi professionalism framework.

During this training, students learn the major oncology concepts through two modules; the first module concerns basic education (UEF 518) and the second one deals with geriatrics, oncology, palliative and end-of-life care (UEF 5112) as shown in table 2.

Table 2. The hourly volume of oncology courses

HV Units	Theoretical course :Lectures, Directed Work Practical work, Personnel work	Internships	Total Course	Percentage of HV
GHV training (During 3years)	2320h	1640h	3960h	100%
Oncology:	30h	-	30h	
Cancer care:	9h	60h	60h+9h	1.68%
Theoretical HV			39h	3.65%
Internship HV			60h	

GHV: Global hourly volume; HV: Hourly Volume

Results of table 1 show that the training of nurses is composed of theoretical courses with an overall hour volume of 2320 h in three years. When the internship period accounts 1640 h. It should be noticed that the module on cancer represents itself 1.68% of the theoretical total number of hours (number of lectures, tutorials, practical work, personal work) of the nursing training. However, the second oncology nursing module represents 3.65% of the overall hours of internships.

3.4 Training needs for oncology nurses in Algeria

All interviewees believe that there is a need to develop oncology nurses as displayed on figure 2.

Figure 2: Training needs for oncology nurses in Algeria



3.4.1 Necessity to develop oncology nurses in Algeria

a. Increased incidence of cancer

Interviewee 1 said *“Given my 29-year experience, I see that we have arrived at a time when cancer rate is increasing very fast and that confirms the need to create a specialty of oncology nurses that should be really beneficial for our patients”*. Interviewee 7 and 15 both said *“I believe it is necessary, since cancer in our country is rapidly increasing. Therefore, it is crucial to train nurses and to prepare them well to take care of patients and to give them necessary time to improve the quality of care”*. Interviewee 8 said *“With the increased number of cancer, I see that today and more than before it is necessary for Algeria to specialize oncology nurses to improve the provision of care for cancer patients.”*

b. Safety of oncology nurses

Interviewee 3 said *“Nurses must be trained for this specialty, because managing and taking care of cancer patients is totally different!! I can provide you an example; we have new recruits in this department who are oriented directly after graduation! They do not even know what this disease is!! So, I see that it is highly necessary to create this specialty.”* Interviewee 12 said *“In Algeria, newly recruited nurses are following a basic nursing curriculum and will be assigned directly to oncology departments, exposing them to the overwhelming complexity of this task.”*

c. Development of oncology nurses in Algeria

Interviewee 1 said *“I wish to have specialized nurses in cancer to develop their skills that will allow them to participate in the care of cancer patients.”* Interviewee 2 said *“I do agree, in our country, it is necessary to train nurses in oncology. They are facing several difficulties with cancer patients, and they are just learning from former colleagues!! So, do they meet the rules of the art?”*. Interviewee 5 said *“It is a necessity because I feel that we are too far away from what is happening abroad. Being a specialist in oncology nurse is not an easy task because of the complexity of this work and even patients, their age, their families and further factors.”* Interviewee 7 said *“Patients need a quality care. I mean that during my initial training, I studied some notions but unfortunately, the most important of the specialty, I did not study. This situation is making my duty more complicated that's why I insists on the necessity to train nurses in oncology, knowing that cancer field novelties are emerging very fast”*.

Interviewee 8 said *“Nursing practice in the world is booming. in Algeria the training standards are not well developed, and with the increased number of cancer, I think that actually and more than before it is necessary for Algeria to specialize oncology nurses to improve the provision of care for cancer patients that why I confirm the specialization training needs.”* Interviewee 10 said *“As long as there is a political will in our country for the improvement of the care among cancer patients by the construction of several cancer centers in our country and set up a 2015-2019 cancer plan that aims to optimize the training of all the HCPs in the field of oncology and develop research in oncology; I think*

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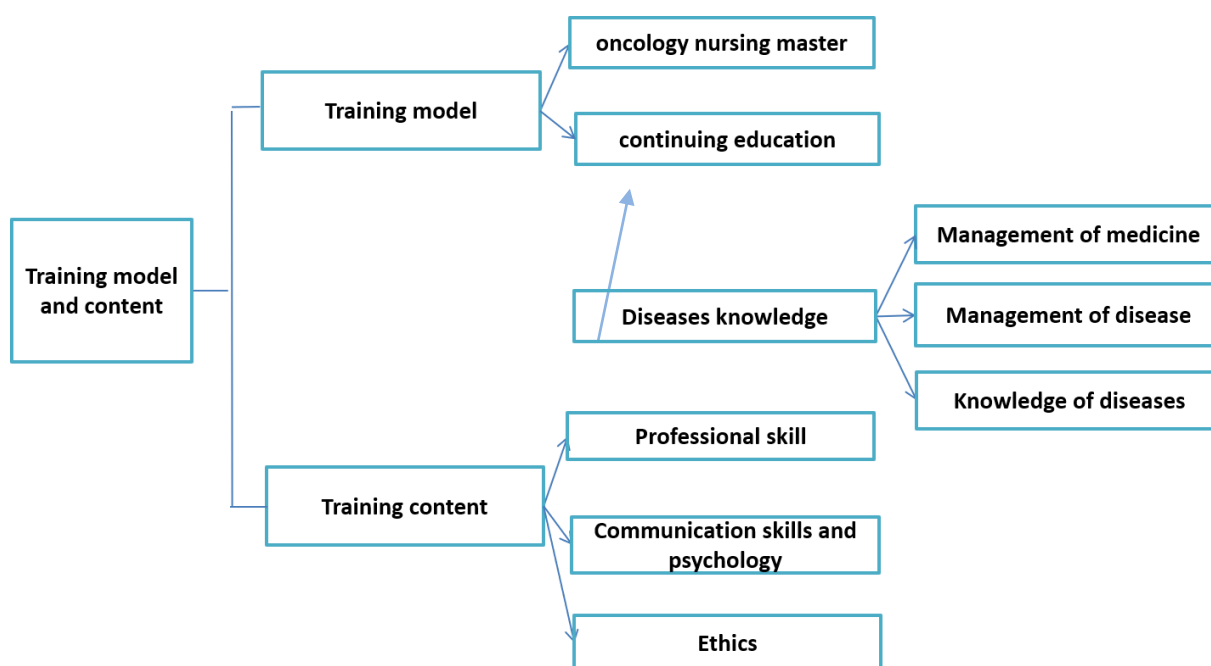
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that training oncology nurses is needed especially is screening, prevention, surveillance, symptom management of nursing, patient/family education, etc. The oncology nurse specialist make an important contribution to the care of patients and serves the nursing and the health systems”. Interviewee 11 said “Nowadays, it comes out of the world, so it is necessary for us and for all country”.

3.5 Training model and content

The training model is summarized on figure 3.

Figure 3: Training mode and content



3.5.1 Training model

Most of the participants saw that depending on the current context and the particular status of the nurses in force, we need a long-term training in oncology as a master degree in oncology nursing with CME sessions. This will depend on their needs allowing them to acquire knowledge and needed skills to improve oncology care.

3.5.2 Training content

The nurses interviewed suggested according to their training needs that the content of the specialization training should be divided into two parts:

a. Diseases knowledge

The training must teach oncology nurses the special knowledge, including diseases, symptom management, care management, antimitotics (preparation, preservation, protective measures), pharmacology (antimitotics, analgesics), waste management, and pain management. It is also essential for improving behavior and communication with cancer patients, communication skills and professional relationship with work team.

All interviewees think that the knowledge of kind of cancer is necessary to oncology nurses. Interviewee 2 said “The content of this training must define everything related to the

specialty and take into consideration our needs.” Interviewee 5 insisted on studying the anatomy of the arteries and veins (arms). Interviewee 3 said “The training content must focus on reinforcing theoretical knowledge that can guide and support nurses during their practice. Planning internship periods during training in hematology and oncology departments. The role of the nurse in front of these hematological malignancies and the cancerous pathologies in pre, per and post chemotherapy.”.

Concerning the disease management, Interviewee 2 and 5 both mentioned the importance of acquiring knowledge on managing pain. Interviewee 2 said “*At the level of our department we do not assess pain, it depends on symptoms. I ask doctors and prescribe painkillers.*” Interviewee 5 said “*The nurses must acquire knowledge of waste management and the role and importance of nutrition in cancer treatment.*”

For medicine management, Interviewee 2 and 5 both mentioned that nurses should well study antimitotics (preparation, preservation, protective measures), pathologies, and how to handle the implantable port.

b. Professional skill

The training must improve nursing oncology practice (on the preparation of products and protective measures, chemotherapy protocols, the implantable chamber, etc.) and encourage group working. Foster learning in a real clinical setting during the internships allows the student to achieve the necessary experience. Encourage oncology nurses to perform sufficient research on oncology field. Interviewee 11 said “*Oncology nurses are caregivers who focus on treatment delivery, education, and symptom management. They are practicing all the time within oncology field to learn more. This requires managing well the disease because of the severity and to undertake more research on oncology. Team work is necessary.*”

c. Psychology and Communication skills

According to our interviewees, getting knowledge about psychology and developing communication skills is fundamental for better management of cancer patients. Interviewee 4, 9, and 10 all mentioned that nurses need to improve their communication skills and care/nurture relationships between professionals.

d. Ethics

Simultaneously, oncology nurses need to understand this aspect during their practice and the responsibilities they are allocated. Interviewee 3 said “*A nurse must know ethics and deontology rules.*” Interviewee 9 said “*The importance of the nursing profession in oncology and professional ethics.*”

Discussions

4.1 Lack of professional training

The obtained results showed that nurses were supposed to provide nursing care to cancer patients and showed difficulties making their mission of nurses more complicated. Three important categories of nurses' difficulties have emerged. These categories concerned: a) knowledge gaps; b) training gaps, and c) organizational difficulties as well as the lack of communication skills with patients, the lack of time, and life stress. In some cases, such

issues have led nurses to be intimidated mainly by the lack of professional knowledge in oncology.

In our study, it was found that further to difficulties encountered by nurses during practice, such as the lack of knowledge, preparation methods and concerns about the toxicity risks of chemotherapy treatment, without appropriate safeguards, a new anti cancer center (ACC) has been recently built in accordance with international standards, however, most hospitals and oncology departments have not developed yet appropriate facilities for the preparation of chemotherapy.

There is another researcher who confirms that workers may be exposed to an increased risk of occupational exposure to antineoplastic drugs through residual drug contamination, both in pharmacies and in patient areas, especially on floors (Sorsa & Anderson, 1996).

Hence, the important role of the organization is to foster a positive workplace safety environment and reduce barriers in the safe handling of the hazardous drug (Callahan & Wallen, 2016).

Due to the lack of training in oncology in Algeria, nurses have had difficulty caring for cancer patients. However, all nurses providing direct patient care or those involved in oncology management and coordination felt a great need to be trained in oncology and to work closely with the multidisciplinary team to ensure better patient care with cancer.

4.1.1 Analysis and interpretation of the nurses' program in Algeria

According to our results, further to analysis and interpretation of the current nursing program and the professional career experience as a teacher at the level of the institute, we found that the cancer module represented only 1.68% of the theoretical total timetable (the number of lectures, tutorials, practical work, and homework) of nursing education. When the second oncology nursing module represented 3.65% of the timetable during internships. These outcomes confirm the lack of program content in oncology in postgraduate nursing creating therefore gaps in knowledge. Further studies found identical result and stated that the lack of oncology training programs are often associated with knowledge gap (Bazzell & Champion, 2018).

4.1.2 The development and training of oncology nurses on the world

Many countries worldwide have developed oncology nurses training and field such the case of the USA, Canada, Norway, etc., where the training programs of foreign nurses are consistent, rich, varied and able to develop the necessary skills to manage patients with cancer.

Oncology nursing is constantly evolving in response to the change of demographics and population growth, the change of regulatory requirements, the development of information and biotechnology, length reduction of stay in hospital, and continued progress in cancer treatment. Nurses are also playing an increasingly important role in caring for cancer patients. However, the practice of oncology nurses will continue to evolve as the demographics of the global population and health care systems evolve too (Cummings & Tate, 2018) (Rexwhite & Onyenania, 2007).

4.1.3 Importance and necessity of training oncology nurses in Algeria

All participating Algerian nurses in our interviews confirmed the need to train oncology nurses, because they state that during their initial trainings, their knowledge in oncology was very limited. Nurses expressed their awareness about the field of oncology which is constantly evolving, the techniques, the procedures and medications are rapidly updated and cancer patients have multiple needs during their hospitalization stay.

It should be reminded that there is a political will in Algeria for the improvement of the care status of cancer patients with the construction of several cancer centers and setting up the 2015-2019 cancer plan that aims to optimize the training of all health care professionals and develop research in the field of oncology.

Several papers support specialization in nursing, the British Royal College of Nursing (NCR) Cancer Nursing Society in 1996 developed a structure for oncology nursing department. The NCR noted that less than 1% of nurses have specialized training in oncology and that there is a need for appropriately trained nurses not only to provide care but also to guide department for future. They suggested that specialized nurses are required to take advanced and advanced educational programs so that they have in-depth specific knowledge and skills (Canadian Oncology Nursing Journal, 2020).

An American author found similar results on the need to specialize oncology nurses because of the specificities and complexity of cancer care, which create a challenge to ensure that all nurses working in this field are well educated. Thus, the future success and improvement of nursing practice is dependent on the provided training (Quinn, 2008). This finding is similar to our research, which highlights the importance of the role of oncology nurse specialist's in managing cancer patients in low-middle resources countries from prevention and early detection to palliative care. These roles can be developed through education as part of international cooperative partnerships with nurses in the practice of advanced tumors to enhance the health and development of nurses' skills (Rexwhite & Onyenania, 2007).

4.2.2 Training content of oncology nurses

In a study, the training was offered on the management of the main oncological/palliative symptoms addressed to nurses and nursing assistants who work with cancer patients as part of the CME provided by cancerology network in Montérégie (RCM), 2018-2019 Quebec. The educational content includes management of symptoms, pain, dyspnea, hiccups and bowel obstruction and associated pharmacological treatments (How to become an oncology nurse, 2022).

A survey conducted by the European Society of Nursing Oncology (EONS) showed that three projects used an analysis based on learning needs as a first step in carrying out the educational program with the aim of filling the knowledge gaps of the nurses. These projects are titled: "Nutrition Oncology Education Program (NOEP)", and Training Initiative Thrombocytopenia, and Anaemia and Neutropenia (TITAN) as training initiative on targeted therapies (EONS, 2005).

Another training program developed by the Canadian Association of Nurses in Oncology, entitled "Standards and Competencies for Cancer Chemotherapy Nursing Practice

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CANO/ACIO", based on the results of the literature search and the analysis of cancer chemotherapy. Chemotherapy-related nursing practice environment in Canada and internationally and expert consensus (CANO/ACIO, 2017).

A research describes the development of an educational program that reflects the needs of nurses by consolidating their experience and developing their skills to play the role of research nurse in a specific field, knowing that the basic content of the educational program proposed reflected the elements generated in the clinical trials nurse questionnaire (Braun & Uziely, 2009).

Other investigations showed that training and support programs for oncology nurses should include discussions of attitudes towards death, such as fear of death and avoidance. So that these often-unexplained issues could help nurses feel less alone in their stimulating work and could help them developing more positive attitude toward the care of dying patients (Gama & Barbosa, 2012) (Banerjee, & Parker, 2017).

In this context, numerous nurses are facing difficulties to communicate with their oncology patients where challenges and key decisions are various during diagnosis and treatment. This article presents findings on program evaluation, self-efficacy, and behavioral demonstration of acquired communication skills. Three hundred and forty-two hospitalized oncology nurses who participated in a communication day vocational training program and course completed assessments, pre-and post-standardized evaluations and evaluations of patients. Participants rated the training favorably and reported significant gains in personal effectiveness in terms of ability to communicate with patients in a variety of settings. The participants also demonstrated the improvement of several empathy skills, as well as clarification skills. Our work demonstrates that the implementation of a training program in nursing communication techniques in a large cancer center is feasible. Furthermore, this will have a significant impact on participants' self-efficacy and communication skills (Banerjee, & Parker, 2017).

4.3 Highlights

The current research was intended to guide the development of a specialty training program in oncology for nurses. The main findings reveal three important categories describing the difficulties encountered by nurses in their practice: a) Knowledge gaps, b) Gaps in training, c) Organizational difficulties, and other difficulties such as lack of communication with patients, lack of time and stress.

In addition, the results reveal seven challenges in discussing research objectives: 1) Changing health care needs for cancer patients; 2) The political will of decision-makers to improve the management of cancer patients through the 2015/2019 NCP and the construction of several cancer centers across the country; 3) The role of the nurse specialist in oncology is crucial in the care of cancer patients and in the continuity of care; 4) Oncology nursing practices focus on the needs of patients and their families; 5) The implementation of a specialized nursing practice in oncology requires a conceptual framework; 6) Lack of specialized skills and professional knowledge in oncology; and 7) Perceived institutional barriers in the care of cancer patients.

These results should guide the development of new specialized training programs for oncology nurses who not only respond to the relevant challenges experienced, but also

provide an opportunity to achieve the results expected by the NCP in improving the care of cancer patients.

4.4 Implications and recommendations

Our results indicate that changes are needed to enable nurses to play more active roles in caring for cancer patients. It has been found that nurses need more specialized training in oncology than other continuing education sessions throughout their careers because the development of oncology education is crucial to improve their specific knowledge and their motivation to work in oncology. Oncology nurses must have an expanded knowledge in oncology to allow them integrating advances in oncology into practice for quality results. As a result, an oncology training program dedicated for nurses should be offered in the National Institute of Educational Training.

Further research is required to quantify work difficulties and to clarify the roles and responsibilities of oncology nurses. In addition, it would be useful to examine the effects of educating nurses working in oncology departments. This will help oncology nurses develop their skills and improve the quality of oncology care.

5. Conclusion

The basic training of nurses in Algeria is too general and conventional that helps to develop global nursing skills. There is no training in Algeria oncology nurse specialists despite the need. While oncology nurses around the world actually have subspecialties such as nursing oncology, palliative care oncology, oncology stem cell transplant, etc.. These training programs provide the highly specialized care required by oncology patients, being familiar with the new technologies. However, it is essential to create, within the framework of the 2015-2019 NCP, training for the health professions, particularly nurses, a specialized oncology nursing area that can meet the needs of the evolution of nursing care. Specialization training for cancer nurses could be a first lever for change through training programs providing the knowledge and skills needed to promote and improve the management of cancer patients and achieve the objectives of this ambitious cancer plan.

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