

Role and skills of the oncology nurse: an observational study

L. Iacorossi¹, F. Gambalunga², M. Di Muzio³, I. Terrenato¹, S. El Sayed³, F. Ricci³, L.A. Pulimeno⁴, I. Notarnicola⁴

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Parole chiave: Infermiere oncologico, competenze, Nurse Competence Scale, infermieristica, studio descrittivo

Abstract

Purpose. The importance of nursing competence arises from its central role in influencing and determining care outcomes. The employment of adequately educated staff, able to base clinical decisions on the best scientific evidence, is one of the components required for delivering high quality nursing care in the oncological field. The aim of this study is to analyze - through the Nurse Competence Scale - the level of competence of nurses working in oncological settings.

Method. A descriptive study was performed between March and September 2017. The participants were recruited among the nursing staff working in the Day Hospital and the Units of the IRCCS -Regina Elena National Cancer Institute in Rome. The confidentiality and the anonymity of the subjects involved in the study were guaranteed by submitting a socio-cultural data sheet -specifically designed to collect demographic and education data - and the Nurse Competence Scale.

Results. The sample included 65 nurses (93%) and 5 head nurses (7%), with a mean age of 41.8 years, predominantly female (80%), who had been working in oncology units for a mean of 17.2 years. The Nurse Competence Scale showed a high level of competence in all dimensions. Moreover, the Chi-Square test allowed to identify the presence of significant associations between the different dimensions of the Nurse Competence Scale and the work experience >15 years and the age > 40 years.

Conclusions. The results of our study show that, even if lacking specific oncology competence, nurses working in oncology care settings have developed a good level of clinical competences. Highlighting the importance of nursing care in the oncology area will increase the demand of both patients and organizations of high quality nursing care, consequently enhancing the nursing profession.

Introduction

“Competence” is an abstract phenomenon that is rather complex to define, evaluate and measure (1). Despite the numerous concept

analysis produced by the national and international literature (2-5), there is still no consensus on its definition.

In Italian, the term “competence” has a meaning that in English is conveyed by two

¹ IRCCS “Regina Elena” National Cancer Institute, Rome, Italy

² Department of the Area of the Health Professions – Azienda Ospedaliera Universitaria “Policlinico Umberto I”, Rome, Italy

³ Department of Clinical and Molecular Medicine, Sapienza University of Rome, Italy

⁴ Centre of Excellence for Nursing Scholarship OPI, Rome, Italy

terms used interchangeably: “competence” and “competency”. Actually, these words refer to two different concepts. The first term refers to the ability of a person to act in a certain situation, while the second one refers to an actual performance (6). Therefore, anyone who wants to acquire “competency” needs “competence” (6, 7).

Nurses play a key role in influencing and, very often, in determining care outcomes (8-10). The level of their competences and their education, combined with the work environment, may deeply affect the results; for this reason, it is crucial to guarantee that these professionals master the necessary competences to meet the needs of our changing society.

Patricia Benner in 1984 (11) identified five levels of competence that nurses can develop over the course of their professional life, in order to optimize their performance: novice, advanced beginner, competent, advanced competent, and expert. A few years later, McGregor (12) developed and refined this concept, emphasizing how expertise goes “from understanding the basics of applied nursing science to an advanced level acquired through years of experience and training” (12).

Therefore, the continuing development of nurses’ competence is a process aimed at implementing a high-quality care (1, 6, 11), which begins with basic education (9) and continues throughout the entire working life (13).

The international literature considers the assessment of competences as a pivotal issue, in order to define the professional level of nursing health services provided in the specific clinical context (14-16, 17). This is a prominent issue for the public health, given that the achievement and development of competences are directly involved in maintaining the health status and the safety of patients (10).

The nursing competence research, as suggested by the study of McHugh &

Lake (18), tends to focus on the individual characteristics of the practitioners, in particular, both to their experience and level of education (18). The available literature highlights the importance of practical education courses (6) for the acquisition of an effective level of competence, in order to enhance the staff effectiveness, which focuses on providing optimal health care services (6, 19). These educational courses allow students and nursing staff to acquire further competences in terms of leadership, patient support, understanding of patients’ needs, knowledge, lifelong learning, work planning, career development and enhancement of their “selected functional role as well as their specialization” (6).

A few studies have evaluated to date the impact that “contextual factors” have on nursing expertise, which is regarded as one of the most important elements in healthcare quality, as well as education level and work experience of nurses, and the influence of clinical environment (18).

In this perspective, oncology units are a complex area, because they require particular motivation and career paths, as well as greater personal development (20, 21). These elements can only be achieved through the establishment of “specialized” education courses, structured on several levels, which will allow the acquisition of specific competences, equally of new graduates and specialists, in other health care areas (22).

The Institute of Medicine (IOM) in *Crossing the Quality Chasm* - a new health system of the 21st century (23) - has identified the employment of adequately trained staff, able to base clinical decisions on the best scientific evidence available (23), as one of the necessary components to deliver high quality care in the oncological field.

In fact, according to Trevillion et al. (24), the work of the oncological nurses goes beyond the provision of patient care:

indeed, it is characterized by “taking care of – managing” a person. For this reason, these professionals must be able to provide timely and appropriate information and ensure the continuity of care by offering a full care to the patient across the continuum of care. This aspect is particularly relevant because nurses are a constant point of reference for oncological patients (25); they are able to influence patient satisfaction, adherence to treatment and overall clinical outcomes (22), as well as his/her quality of life (24).

Despite this, the proposed teaching processes related to treatment goals, communication skills and expertise in cancer clinical practice are not well defined (22). In recent years, the European nursing educational setting has seen an improvement, in terms of study course provided, which aimed at fostering continuing and specific education for nurses. Nevertheless, we have not come to define a common standard of nurse education, as mentioned in the Bologna declaration (26), yet. For example, today in Italy there are no real specific education courses for oncology nurses, then, education has become secondary to the hospital/institute’s improvement programs and dependent on the willingness of the professionals to study new concepts and techniques in delivering care (27).

This diversity is also linked to the lack of a universal method for assessing technical skills and abilities related to critical thinking, reflection and the use of interpersonal strategies of specialist nursing. In cancer care, this assessment is essential to ensure that patients receive assistance through safe services (28, 29).

Scientific evidence is often based on nurses’ perceptions as a tool for evaluating their performance and obtaining levels of competences, which are likely to be overestimated (28).

Given the lack of specialized education courses in the Italian oncology nursing context, the aim of this study is to verify the

level of competence of the nurses employed in our wards, highlighting some associated factors.

Methods

Study design

A cross-sectional survey was performed between March and September 2017. The descriptive quantitative study design was reported here according to Guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) (30).

Sample and setting

The recruitment of the sample took place within the Day Hospital and the Departmental Units of the IRCCS - Regina Elena National Cancer Institute in Rome. Participants were recruited among the nursing staff involved in the study and working in the Institute between May and July 2017.

The inclusion criterion was being employed as nurse in the oncology ward, while the exclusion criterion was not being an oncology nurse. All the eligible participants received written information on how to provide their consent to participate in the survey. The sample consists of 70 nurses, who returned their questionnaires completed in all their parts. It was not possible to include in the final analysis 34 questionnaires because they were not complete.

Instruments

The tools used to carry out the survey were a socio-cultural data sheet, specifically designed to collect demographic and education data, and the NCS, a self-assessment tool divided into 7 dimensions each of them providing a set of specific competence, for a total of 73 items (Table 1) (31). The NCS assesses the level of competence of nurses through:

1) A visual-analogue scale (VAS): it ranges in scores between 0 (absence of competence) and 100 (excellent competence) and the achieved score was the result of the self-assessment of each statement included in the NCS (32). For practical purposes, this scale was divided into quartiles: 0-25 = low competence level, 26-50 = discrete competence level, 51-75 = good competence level and 76-100 = excellent competence level (33).

Table 1 - Dimensions of the Nurse Competence Scale

Competence	no. items
Helping role	7 items
Teaching-coaching	16 items
Diagnostic function	7 items
Managing situation	8 items
Therapeutic intervention	10 items
Ensuring quality	6 items
Work role	19 items

2) A 4-point Likert scale: it assessed how frequently, in the daily clinical practice, nurses used the competence expressed by each item. The possible answers (32) were: 1) never = no use of competence; 2) rarely = occasional use of competence; 3) often = frequent use of competence; 4) very often = continuing use of competence (34).

The validity of the tool was tested in several European countries (14-16, 35-37). In Italy, a series of studies (10, 32-34) were conducted to validate the reliability of NCS. The original research of Finotto & Cantarelli (2009) detected a Cronbach's alpha value over all the NCS's dimensions, expressed in a range of 0.70-0.96, and it was confirmed by the study of Notarnicola et al. within 0.90-0.94 (10) and by the study of Scavone et al. with values between 0.93-0.97 (34).

Bias

With regard to the potential biases, in our study there could be biases of non-response.

The lack of response is a problem that particularly concerns transversal studies and can compromise the measure of the result. In addition to this, sample selection biases may also be present. Given that our study examines only a portion of the oncology nurses, this sample is not representative and may cause serious selection errors. However, we attempted to minimize other potential biases through a well-defined statistical analysis.

Data analysis

As first, a descriptive analysis of both socio-cultural data and mean values on NCS dimensions was carried out. Moreover, an association between categorical variables through the non-parametric Chi-Square test with a statistical significance of $p < 0.05$, using the Statistical Package for the Social Program Science (SPSS- version 21.0 Chicago) was performed.

Ethical considerations

The participation in the study was purely voluntary and the nurses involved were informed about the objective of the study. The confidentiality and the anonymity of the data collected were guaranteed during all the research phases. The delivery of questionnaires by the participants was considered as submission of consent. The author of the NCS tool authorized its use.

Results

The sample consisted of 70 nurses, who returned their questionnaires completed in all the parts. The percentage of respondents was 67.3% of 104 questionnaires administered. The average age of respondents ($n=70$) was 41.8 (SD \pm 10.4). From the socio-demographic data described in Table 2, we observed that more than half of the sample (62%) was older than 40 years. 78.6% ($n=55$) of the nurses were female and 20.0% ($n=14$)

male. The sample consisted of 93% nurses (n=65) and 7% nurse coordinators (n=5). Among all participants, 54.3% (n=38) of them have a professional diploma, whereas 38.6% (n=27) had a Bachelor's Nursing degree. The work experience in oncology wards of the nurses surveyed was on average of 17.2 (SD \pm 10.3) years.

Table 2 - Socio-demographic data analysis

Age	
Mean	41.8 \pm 10.4 years
\leq 40 years	37.1% (n=26)
>40 years	60.0% (n=42)
Missing data	2.9% (n=2)
Sex	
Male	20.0% (n=14)
Female	78.6% (n=55)
Missing data	1.4% (n=1)
Education	
Professional Diploma	54.3% (n=38)
Bachelor's Degree	38.6% (n=27)
Missing data	7.1% (n=5)
Qualification	
Nurse	93.0% (n=65)
Nurse Coordinator	7.0% (n=5)
Working experience	
Mean	17.2 \pm 10.3 years

The analysis of the first section of the NCS was conducted using the VAS scale (score 0-100), as shown in Table 3, and aimed at describing the level of self-assessed

Table 3 - Mean of the Nurse Competence Scale dimensions

Competence	Mean \pm SD	no.
Overall	75.2 \pm 11.9	49
Helping role	74.1 \pm 12.9	65
Teaching-coaching	75.2 \pm 12.7	59
Diagnostic function	72.0 \pm 14.0	68
Managing situation	74.5 \pm 13.6	67
Therapeutic intervention	75.4 \pm 12.7	63
Ensuring quality	72.9 \pm 12.3	63
Work role	74.5 \pm 13.6	63

competence related to the seven dimensions of NCS. Depending on the dimension investigated, results indicated that the mean of competence level perceived by nurses varies from the lowest score measured in 'Diagnostic function' (72.0 SD \pm 14.0) to the highest one in 'Therapeutic interventions' (75.4 SD \pm 12.7).

The median score over all dimensions of nursing competence was 75.2 (SD \pm 11.9), which is equal to the VAS base score detected between a level of good and excellent competence.

Table 4 reports the frequencies of competences use in the different dimensions of NCS. Results are distributed between a high level (Likert score 3-4) and a median level (Likert score 2-3) of frequency; this indicates a great use of all competences in the clinical context. A high level of using greater competence was detected in the 'Therapeutic' dimension, as declared by 61.0% of the sample, as well as in 'Managing

Table 4 - The frequency of using competence

Competence	High level	Median level	Moderate level	N°
Helping role	42.0%	52.0%	6.0%	65
Teaching-coaching	51.0%	46.0%	3.0%	59
Diagnostic function	44.0%	46.0%	10.0%	68
Managing situation	52.0%	39.0%	9.0%	67
Therapeutic intervention	61.0%	32.0%	7.0%	63
Ensuring quality	48.0%	46.0%	6.0%	63
Work role	43.0%	51.0%	6.0%	63

situation', as reported by 51.0%, followed by 'Teaching-coaching' area considered by 51% of the respondents. A median level of using competence was identified in three dimensions of NCS: in 'Helping role' dimension, 52% of the nurses assess the frequency of using competence into a range score of Likert 2-3 (occasionally/frequently); in 'Diagnostic function' and 'Work role' dimensions, respectively 46% and 51% of the participants expressed a median score. Only a few participants reported a moderate level of using competences (Likert range 1-2) distributed over a percentage of 6% in 'Helping role', 'Therapeutic intervention', 'Ensuring quality' and 'Work role' dimension; only 3% has been detected in 'Teaching-coaching' dimension, 10% in 'Diagnostic function' and 7% in 'Managing situation'. We found statistically significant differences in mean values for four competence dimensions of NCS correlated to several socio-cultural variables, such as work experience, age, and education.

The Chi-Square test allowed to identify the presence of significant associations

between work experience >15 years and a greater competence for 'Helping role' ($p = 0.044$), 'Managing situations' ($p = 0.008$) and 'Ensuring quality' ($p = 0.037$). Moreover, the age > 40 years is associated with greater competence in 'Helping role' ($p = 0.057$) and in 'Managing situation' ($p < 0.0001$), the latter dimension is significantly associated also with an educational level of the 'Professional diploma' instead of the Bachelor's degree ($p = 0.003$) (Table 5).

Discussion

The aim of the study was to analyze the competences of nurses working in cancer care settings using an objective measurement tool, such as NCS (32).

According to the Oncology Nursing Society (ONS), as declared by Institute of Medicine (IOM, 2011), it is necessary to measure competences in oncology settings over time to assure the delivery of both high quality and safe care to oncological patients (6).

Table 5 - The most significant associations of some dimensions of the NCS.

Competence			High level	Median level	Moderate level	Sig. (Chi-Quadro test)
Helping role		≤15 years	1	19	7	p=0.044
		>15 years	3	13	18	
Managing situation	Working experience	≤15 years	2	16	11	p=0.008
		>15 years	4	6	24	
Ensuring quality		≤15 years	2	17	8	p=0.037
		>15 years	2	10	20	
Managing situation		>40 years	4	8	29	p<0.001
		≤40 years	2	17	6	
Helping role	Age	>40 years	3	16	21	p=0.057
		≤40 years	1	17	6	
Managing situation	Study title	Professional Diploma	4	8	25	p=0.003
		Bachelor's Degree	1	16	8	

In this context, the assessment of nursing competences is associated with the requirement of the health care organizations to support the continuing professional development of nurses, meant as the process of maintenance and development of knowledge, skills and attitudes of nursing professionals. These factors are influenced by the changing level of competence along the career path of nurses (38).

The requirement of a systematic assessment of competences is a well-known issue that the Italian Healthcare organizations (39) have to face, due to the lack of a wider consensus on the methodology and the tools to use to measure competences (40).

The NCS proved to be a reliable tool for the self-assessment of nursing competence in different clinical settings (10). The use of the NCS tool in the oncology setting allows an evaluation within a standardized framework, built starting from Benner's (1984) reflection on nursing competence. In fact, Benner (1984) described the development of competences as a process by which nurses gain experience in a particular clinical setting, moving along a continuum from novice to expert, through the use, in clinical practice, of knowledge and skills acquired during the educational experience in different nursing contexts (11).

In our study, oncology nurses reported a high level of competences such as it was described in good/excellent range (VAS 75.2), related to an equally high level of using competence in a clinical context included between high (Likert range 3-4) and medium level (Likert range 2-3).

Our goal is to assess the level of competence while investigating those factors that could influence nurses' competences, such as their years of work experience, age, and education.

Our findings are consistent with several studies: Flinkman et al., for example, proved - through their literature systematic review of studies concerning the use of the NCS as

competence assessment tool - that the length of work experience, age, higher education is positively correlated with a high level of nursing competence. Indeed, the use of the NCS allows measuring the level of competence of all respondents, including novices, whose work experience is short (40).

Our study showed that nurses with more experience have a higher level of self-assessed competence in all the categories of the NCS. This result is in line with the study of Takase (38), which highlighted the strong correlation of the level of nursing competence with the clinical experience, and the positive feedback on the quality of care provided that results from this connection. Takase also emphasized that there is a complex relationship between the length of work experience and the level of competence, and, according to his measurements, it does not grow following a linear model during the nursing career (38).

Nurses gain clinical experiences along their career path, as they daily face new situations, from which they acquire new knowledge, skills and attitudes, necessary to guarantee adequate nursing performance (41). Tabari - Khomeiran et al. (42) identified the phases in which nurses developed competence, and reported that the period of learning through experience is followed by a period of consolidation that occurs when nurses gain control over their practice, confronting themselves with new and challenging situations (42). Our research supports these data, as it showed that a longer work experience translated into greater competence. Therefore, in line with Hamstrom et al. (43), we found a similar result in the relationship between the length of work experience and several dimensions of investigated through the NCS, i.e. 'Managing situations', 'Ensuring quality' and 'Helping role' (43).

Our results show that higher level of competences are correlated with an older age (> 40 years).

These findings are consistent with the data shown by Wangenstein et al. (17) in a study that, though it concerned a different nursing specialization, highlighted that beginner practitioners detected a lower frequency of using competences compared to experienced nurses (17).

In our study, the difference in nurses' education level is related to a higher level of competence. Data reported in the international literature (40) indicate that higher levels of education are correlated with higher levels of competence, revealing a consistency with our findings, which must be interpreted within the specific Italian educational context. In fact, health workers with a professional diploma proved to have a greater competence than graduated nurses. This situation took origin from the changes that the Italian education system has had over the last decades. As a matter of fact, the inclusion of nursing education among the Italian university degree courses is rather recent; previously, nurses only achieved a vocational diploma. Therefore, the length of work experience can explain the relation between the achievement of a vocational diploma and a higher level of competence. In the light of the fact that nurses with a vocational diploma have worked for at least 18 years in the nursing field, we can identify the long experience as a decisive factor in the development and achievement of competences.

According to O'Leary (44), experience is not only gained through the practical application of theoretical aspects, but it is a complex process that is determined by all the different situations that every nurse deals with during his/her career. Nurses face these situations thanks to their 'know how', necessary to evaluate and synthesize the experiences, and developed on the basis of previous situations they had managed (17, 43, 44).

The complexity and importance of nurses as communicators in oncological settings are detected from the high levels of

competences reported in the areas related to symptom management and education role. In particular, we found that the respondents older than 40 proved to have the highest level of competence in these areas.

In order to respect the standard of care, oncological nurses have to recognize the physical and emotional needs of the patients and their families. Moreover, they have to manage them across the continuum of care (45). According to Portella Riberio et al. (45), families support the patients in all phases of the disease, therefore, the oncological nurse has often the opportunity to develop a relationship with the family members, providing them with psychological and communicative support and meeting in this way the goal of an effective holistic assistance (46, 47).

Limitations

The sample dimension and the realization of a single center survey represent a limitation of this research. In order to generalize the results, it would be advisable to recruit a larger sample in a multi-center study. Furthermore, data resulted from a self-assessment survey may lead to an overestimation of the level of competence, if not compared with results of other research studies (28).

Conclusions

It was established that the quality of nursing care is a realistic objective, if the level of competence of nursing staff is appropriate to the context in which they daily operate (48).

Nurses can achieve this optimum only if they are encouraged to increase continuously their competences, and if the Health System shows its deliberate willingness to provide them with tools and opportunities that will ease this process.

Oncology nurses are called to assess the individual needs of oncological patients,

implement efficiency during the various stages of cancer disease, measure the impact of the disease on the patients, their family and the team of the organizational model adopted, and evaluate the results. To carry out their job effectively, they must be competent in coordination, communication and provision of support to patients and family members, and only adequate education and specialization will allow them to build these crucial competences.

The results of our study show that, even if lacking specific oncology competence, nurses working in oncology care settings have developed a good level of clinical competences.

The aspects highlighted by our study have numerous implications in nursing practice. The correlation between experience and competence that we found supports the need of researching and implementing new nursing management strategies. Despite the positive outcomes, the results of our research indicate the need to repeat the study in other clinical settings, different from the oncological context.

The development of further cross-sectional studies regarding the use of the NCS in the oncology area, as well as in other fields of specialization, is important to ensure continuity in the assessment of nursing competence in the Healthcare Organizations.

Moreover, it would be interesting to study, through multicentric mixed-method surveys, the factors associated with oncology nurses' skills and knowledge in order to develop the core competence in daily practice on a more reliable basis, as proposed by ONS (25), and make it available to nurses who want to work in this setting.

Highlighting the importance of nursing care in this area will increase the demand of both patients and organizations for a high quality nursing care, consequently enhancing the nursing profession.

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Riassunto***Ruolo e competenze dell'infermiere di oncologia: uno studio osservazionale***

Introduzione. L'importanza delle competenze in ambito infermieristico nasce dalla loro centralità nell'influenzare e, molto spesso, nel determinare gli outcome assistenziali. Fra le componenti necessarie per l'erogazione di cure di alta qualità in ambito oncologico, assume particolare rilevanza la presenza di personale adeguatamente formato ed in grado di fondare le decisioni cliniche sulle migliori evidenze scientifiche. L'obiettivo di questo studio è quello di analizzare le competenze degli infermieri che operano in setting di cura oncologici.

Materiali e metodi. È stato condotto uno studio descrittivo fra Marzo e Settembre 2017. I partecipanti sono stati reclutati fra gli infermieri in servizio presso gli Ambulatori, i Day Hospital e le Unità Operative dell'IRCCS Istituto Nazionale dei Tumori Regina Elena di Roma. I dati sono stati raccolti in modo tale da mantenere l'anonimato e la riservatezza dei soggetti coinvolti nello studio, utilizzando una scheda per i dati socio-demografici costruita ad hoc e la Nurse Competence Scale per i dati relativi alla competenza.

Risultati. Il campione è costituito da 65 infermieri e 5 coordinatori infermieristici, con un'età media di 41.8 anni, prevalentemente donne (80%) che lavoravano in setting oncologici in media da 17.2 anni. La NCS ha riportato un elevato livello di competenze in tutte le dimensioni indagate; il test del chi-quadro ha inoltre mostrato una associazione statisticamente significativa fra diverse aree della NCS e un'esperienza lavorativa > 15 anni e un'età >40 anni.

Conclusioni. I risultati dello studio riportano come, anche in assenza di una competenza oncologica specifica, gli infermieri che operano in setting di cura oncologici abbiano sviluppato un buon livello di competenze. Aumentare la visibilità dell'assistenza infermieristica specialistica in tale ambito potrà aumentare la richiesta, da parte dei pazienti e delle organizzazioni, di un'assistenza infermieristica di alta qualità, con conseguente valorizzazione della professione stessa.

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