

A competency model for nurse executives

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Abstract

Background: Nurses capable of adequately developing their competencies in the management field are essential for the sustainability of health-care organizations. Such competencies should be included in a model of specific competencies.

Aim: The aim of this research is to propose a competency model for nurse executives.

Methods: The Delphi method was applied to reach a consensus on the required competencies, and Principal Component Analysis (PCA) was applied to determine the construct validity and reduce the data set's dimensionality. Consensus was defined based on at least 80% of the experts agreeing with the proposed competencies. For each competency, the development levels were beginner, advanced beginner, competent, highly competent and expert.

Results: From among the 51 competencies that were identified to define a model for nurse executives, decision-making, leadership and communication stood out. The PCA indicated the structural validity of the proposed model by saturation of the principal components (Cronbach's $\alpha > 0.631$).

Conclusion: Nurses wishing to develop their professional careers as nurse executives must first develop the competencies shown in the proposed model. Nurse executives should follow the educational programmes specified in this study, to adapt their knowledge to this role's requirements.

KEYWORDS

chief nurse, competency, governance, nurse director, nurse executive

Summary statement

What is already known about this topic?

- The Nurse Executive has a very complex role in health care and has a great impact in institutional governance and sustainability of health-care organizations, improving quality of care and patient outcome.
- The necessary competencies for nurse executives are usually not clearly defined, which could explain the lack of conceptualization of their roles.

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- Little research has been addressed to competencies for nurse executives in any countries.

What this paper adds?

- Fifty-one competencies were defined, structured according to their defining characteristics in six dimensions: management; communication and technology; leadership and teamwork; knowledge of the health system; nursing knowledge and personality.
- The level of development of each competency ranged across 'competent', 'very competent' and 'expert'.
- The training needed for nurse managers is at master's and doctoral study levels.

The implications for this paper:

- This model has implications for organizational policies, the efficiency of organizations and their sustainability, as well as for the education and practice of nursing management
- The proposed model contributes to the definition of the nurse executives' functions, their selection processes, the design of their curriculum in traditional academic institutions and to continuous professional development programs by organizations.
- A better understanding of competencies is likely to provide information on interventions that can improve nurses' work environment, patient care, patient safety and organizational outcomes.

1 | INTRODUCTION

Economic and social changes have led to an adaptation of health care at all levels and a change in the way these services are provided (Cathcart & Greenspan, 2012; Cummings et al., 2010; Ding et al., 2019; Kantanen et al., 2017). The principal drivers for the development of high-level management competencies are the relationships between the economy, sustainability and quality of health care, which are directly related to higher performance and results (Boyatzis, 1982; Groves, 2011; Kerfoot & Luquire, 2012; MacMillan-Finlayson, 2010; Savage & Kub, 2009).

In this context, nurses must be a part of the health-care core services, so that health-care organizations can address these changes (Aiken et al., 2011; Thorne, 2019). Accordingly, Whitt et al. (2011) affirmed that when nurses are involved in different parts of the health-care process (management and nursing care), better results are achieved (Ho et al., 2017).

1.1 | BACKGROUND

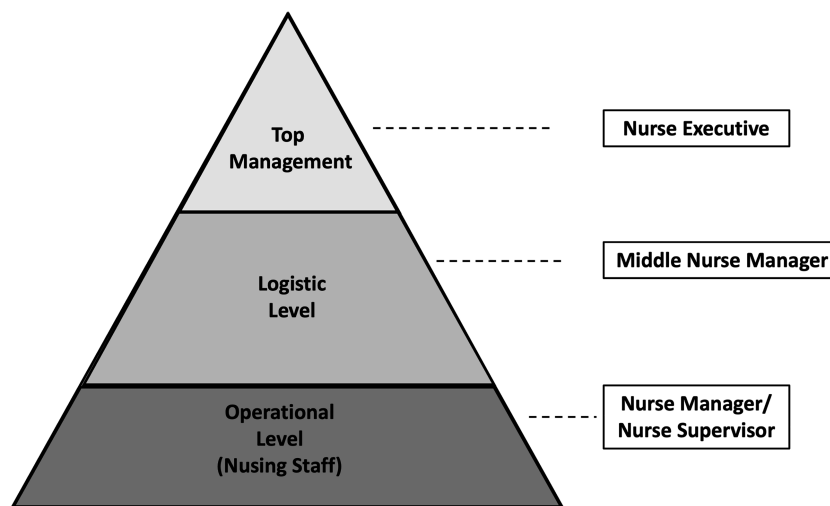
Nurse executives (in Spanish: 'directora de enfermería' and 'sub-directora de enfermería') are responsible for aligning the mission, vision, values, philosophy and culture of their organizations with nursing care activities, as well as for transferring this corporate perspective

to other nurses (Clark, 2012) (Figure 1). Likewise, they are responsible for managing resources, organizing nursing care, planning and evaluating the services provided and contributing to the achievement of optimal results for both their organizations and patients, as well as providing support and motivation for teamwork (American Organization of Nurse Executives, 2015; Scoble & Russell, 2003). Due to the increasing responsibilities that the nurse executives must address, extensive training—including adaptation to complex environments and competencies—are often required, for which a doctoral level is preferable (Clark, 2012). While management competencies are an essential resource to identify, guide and train nurse executives (Meadows & Dwyer, 2015), such competence training in management must go beyond the field of nursing (Baxter & Warshawsky, 2014; Chase, 2012; DeOnna, 2006).

Although there is no standard definition of managerial competence (Gunawan et al., 2019), it can be defined as the correct combination and application of nurse executives' knowledge, attitudes and skills in specific management functions that are observed and measured as behaviours (Gunawan et al., 2020).

The necessary competencies for nurse executives have been described by different researchers. Chase, for instance, identified technical, human, conceptual, leadership and financial management skills (Chase, 2010). The American Organization of Nurse Executives (AONE) identified relationship management, communication, leadership, knowledge of the health-care environment and financial skills as strategic

FIGURE 1 Management level



areas of competency development (American Organization of Nurse Executives, 2015). For their part, González-García et al. (2020) identified the basic core competencies—relationship management, communication, listening, leadership, conflict management, ethical principles and team management skills—for nurse executives in Spain, whereas Pillay (2011) pointed out that people management and organizational capacity, along with strategic thinking, were the key competencies.

Conversely, literature indicates that it is necessary to improve the knowledge about the competencies for nurse executives (Meadows, 2016; Scoble & Russell, 2003; Vance, 2009), since the necessary competencies are usually not clearly defined, which could explain the lack of conceptualization of their roles. The same issue is evident in the Spanish context, which has no competency model for the performance of managerial functions at senior management levels.

Therefore, this study aimed to propose a competency model that nurse executives should develop in the Spanish Health System. To this end, through expert consensus, the following specific objectives were proposed for nurse executives:

- to determine the competencies required,
- to describe the required level of development of these competencies,
- to describe the training necessary to develop each of the required competencies and
- to evaluate the proposed model's structural validity.

2 | METHODS

2.1 | Literature review

This study was based on the results of the scoping review carried out during 2018–2021 to identify the necessary competencies for nurse executives (González-García et al., 2021). Electronic databases (Web of Science, Scopus, PubMed and CINAHL) were used, and 56 competencies were identified and utilized as the basis for the Delphi study, which assesses the competencies for executive positions.

2.2 | Delphi methodology

This study was carried out using four rounds of the Delphi method, to obtain a consensus from a panel of experts (Linstone et al., 1975), since a global vision will provide more solid information than that offered by a single expert and thus reduce subjectivity (Linstone et al., 1975; Varela-Ruiz et al., 2012).

The objective of the first Delphi round was to reach a consensus among the panel of experts on the competencies necessary for nurse executives. During the second round, the experts were individually asked if they wanted to reconsider their opinions in light of the group's responses. In the third round, they were asked for their opinions on the competencies of nurse executives at the operational level and the training required for each of the competence levels (expert, highly competent, competent, advanced beginner and novice), so as to reach a consensus. The fourth round allowed the experts to reconsider their answers in light of the responses obtained from the third round.

2.2.1 | Consensus

For this study, consensus was defined based on at least 80% of the experts agreeing with (i) the competencies by answering 'agree' or 'totally agree' in the questionnaires, (ii) the level of the competencies and (iii) the type of training required. In cases where no agreement was reached, the points were omitted for the next Delphi round.

2.2.2 | Participants

In this study, we decided to invite experts from two categories—health management and health environment—and 12 groups, since the objective was to obtain a 360° image of the nurse manager environment (Table 1). Therefore, 50 experts were contacted by telephone; all agreed to participate. Subsequently, an e-mail was sent with the informed consent, commitments and explanations of the process. None of the experts dropped out of the study.

TABLE 1 Sociodemographic characteristics of the panel expert

Characteristics	Range/category	Frequency	Percentage
Age	<40	10	20
	41–50	15	30
	51–60	18	36
	>60	7	14
Sex	Female	32	64
	Male	18	36
Education	Master's degree	34	68
	PhD	14	28
Expert group 1	Minister of health	3	6.1
Expert group 2	Head of the health department	5	10
Expert group 3	General Council of Nurses	3	6
Expert group 4	Scientific association	4	8
Expert group 5	Trade union	3	6
Expert group 6	General manager	5	10
Expert group 6	Medical director	2	4
Expert group 6	Nurse executive	5	10
Expert group 6	Management director	1	2
Expert group 7	Middle nurse manager	2	4.1
Expert group 8	Nursing supervisor	3	6.1
Expert group 9	Nurse	3	6.1
Expert group 9	Doctor	2	4.1
Expert group 9	Assistant nursing care technician	2	4.1
Expert group 10	Nursing degree students	2	4.1
Expert group 11	Research/teaching	4	8.2
Expert group 12	Lawyer	1	1

2.2.3 | Variables

The study variables comprised the following:

- Sociodemographic variables: To proceed with defining the profile of the experts, information was collected relating to their age, sex, profession, university education, postgraduate training, professional role, place of study, years of professional practice and managerial experience, managerial functions performed and international experience.
- Competencies: The list of competencies to be proposed to the experts was derived from the literature review.

2.2.4 | Delphi questionnaires

Two ad hoc questionnaires were developed as measurement instruments:

- Competencies required for nurse executives: Each participant rated their level of agreement or disagreement with each competence on a Likert scale of one to five (1 = *Strongly disagree*; 5 = *Strongly agree*).

- Level of competency development of the nurse executives: To agree on the level of development of their competencies at each level of management, the degree of agreement or disagreement with each competency was recorded on a Likert scale of one to five (1 = *Beginner*; 5 = *Expert*), while the type of training required to develop these competencies was rated on a Likert scale of one to six (1 = *University Extension Diploma*, 2 = *Continuous Education*, 3 = *Experto Universitario* [University Expert – specialized postgraduate program in Spain], 4 = *University Specialization Diploma*, 5 = *Master's degree* and 6 = *PhD*).

2.2.5 | Level of development

For the purpose of this study, the term 'development level' was used to refer to the depth of knowledge that nurse executives needed to acquire in each competence, at each of the functional levels. Thus, the levels of development were as follows:

- Beginner follows the rules and plans.
- Advanced beginner provides partial solutions to unfamiliar or complex situations.
- Competent demonstrates strong competence.

- Highly competent demonstrates significant competence.
- Expert demonstrates behaviours of the competency model.

2.3 | Principal component analysis

Principal component analysis (PCA) is a data transformation technique, whose objective is to reduce the multivariate data's dimensionality and preserve as much relevant information as possible (Sewell, 2008). The factor analyses were carried out following the Thurstone theory (Thurstone, 1931, 1957) in three phases: (i) evaluation of the adequacy of the data for the factor analysis, (ii) extraction of the factors and (iii) rotation and interpretation of the factors.

To determine the data's suitability for factor analysis, the Kaiser–Meyer–Olkin test was used. The next step consisted of factor extraction using the Kaiser criterion, which takes a decision based on an eigenvalue greater than one (Kaiser, 1960), and a scree plot, which is a graphical representation of the eigenvalues (Cattell, 1966). Finally, to achieve a simple, and easy to interpret structure, the factors were rotated and interpreted by means of the varimax rotation method and Kaiser's standardization.

2.4 | Ethical approvals

A Delphi research not involves human subjects, human material, human tissues or human data. Therefore, the approval of an ethics committee was not necessary.

All subjects gave their informed consent for inclusion before they participated in the Delphi study.

3 | RESULTS

3.1 | Expert panel's demographics

A total of 50 experts agreed to participate in the Delphi study. Table 1 shows their demographic characteristics.

3.2 | A competency model for nurse executives agreed upon by the panel of experts

The response rate was 100% for all the Delphi rounds. During the first and second Delphi rounds, 51 competencies from the proposed list were agreed upon, on the basis of a consensus of more than 80%. The competencies constituting the model were determined based on round 2 (Table 2), in which competencies with a consensus of less than 80% were eliminated.

During the third and fourth Delphi rounds, it was demonstrated that the 51 competencies were necessary in nurse executives, with a consensus that these should be at the 'expert', 'highly competent'

and 'competent' levels. The way to reach the required level of development of each competence was also agreed upon, during these rounds. Table 2 shows the final consensus, which constitutes the competency model for nurse executives in Spain, grouped into six dimensions, based on their defining characteristics (Figure 2).

Table 3 presents the consensus regarding the training necessary for the development of each of the competency levels.

3.3 | Principal components analysis

For the PCA, the competencies were grouped based on their defining characteristics into six dimensions. The first three dimensions—management; communication and technology; and leadership and teamwork—were saturated in four main components; the fourth and fifth dimensions—knowledge of the health system and personality—were saturated in two main components, whereas the sixth dimension—nursing knowledge—was saturated in only one component (Table 4). Since the factor loadings of each of the integral items of each dimension far exceeded the lower limit of 0.4, and the Cronbach's α demonstrated the quality of the fit (Table 4), it can be concluded that the proposed model is structurally adequate.

4 | DISCUSSION

This study presents a competency model that should be developed for nurse executives (in Spanish: 'directora de enfermería' and 'subdirectora de enfermería') (Figure 1) in the Spanish Health System. The model is composed of 51 competencies structured according to their defining characteristics in six dimensions: management; communication and technology; leadership and teamwork; knowledge of the health system; nursing knowledge and personality (Figure 2). These findings are aligned with the AONE model, which identified 35 competencies (American Organization of Nurse Executives, 2015). Although 51 competencies were identified using the AONE model as a basis (Pillay, 2011), these models differed from our proposal, in the weighting given to some of the competencies that coincided with their models, such as those related to business management. This competency model allows the different health services and the health organizations that comprise them, to define the executive nurse position and the expected level of performance. At the same time, it allows the inclusion of the competencies and the level of development required for these positions in the application process for access to executive nursing positions.

Regarding the development of the competencies, an agreement was reached in Delphi rounds 3 and 4. The experts agreed that the competencies should be developed at the following levels: 'competent' (considered to have been achieved when there was a strong demonstration of competence), 'highly competent' (achieved when there was a significant demonstration of competencies) and 'expert' (achieved when demonstrating behaviours of the competency model).

TABLE 2 Model of competencies for nurse executives

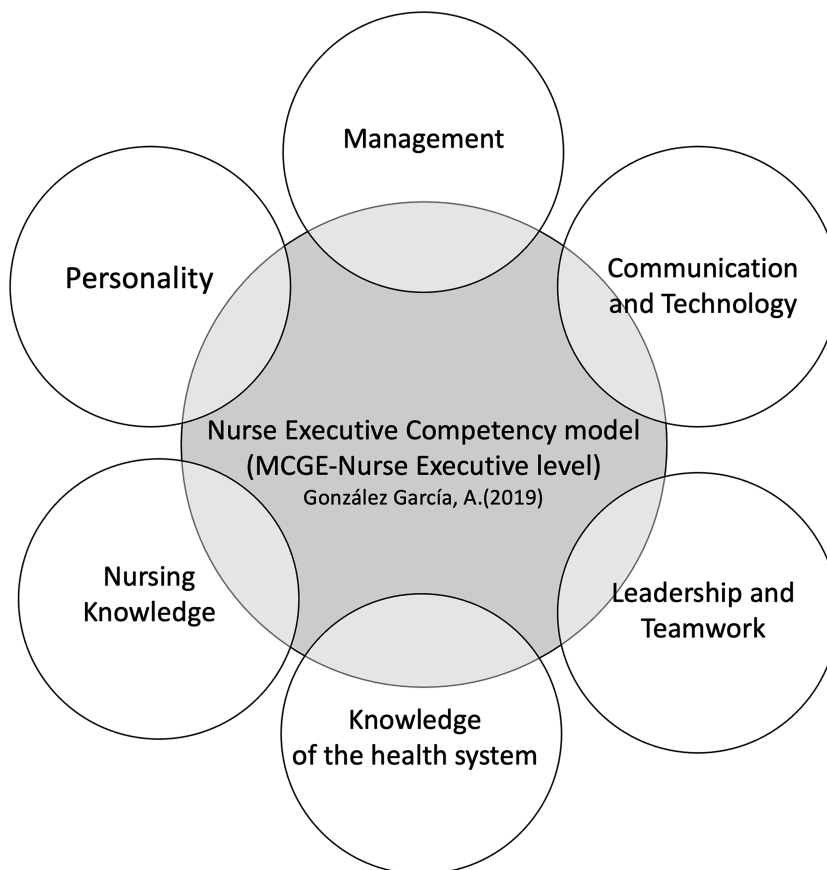
I. Management	II. Communication and technology
1. Analytical thinking (EXP)	9. Communication skills (EXP)
2. Decision-making (EXP)	10. Feedback (EXP)
3. Innovation (V. COMP)	11. Evaluation of information and its sources (EXP)
4. Estrategic management (EXP)	12. listening (EXP)
5. Human resources management (EXP)	13. Information systems and computers (V. COMP)
6. Legal aspects (V. COMP)	14. Technology (COMP)
7. Organizational management (EXP)	15. English medium level of writing (COMP)
8. Result orientation (EXP)	
III. Leadership and team work	IV. Knowledge of the health system
16. Relationship management (EXP)	31. Care management systems (V. COMP)
17. Leadership (EXP)	32. User care skills (V. COMP)
18. Career planning (V. COMP)	33. Health policy (EXP)
19. Influence (EXP)	34. Identification and responsibility with the organization (EXP)
20. Change management (EXP)	35. Knowledge of the health environment (EXP)
21. Delegate (EXP)	36. Quality and safety (V. COMP)
22. Conflict management (EXP)	37. Quality and improvement processes (EXP.)
23. Ethical principles (EXP)	
24. Power and empowerment (V. COMP)	
25. Critical thinking (V. COMP)	
26. Collaboration and team management skills (EXP)	
27. Interpersonal relations (EXP)	
28. Multi-professional management (EXP)	
29. Team building strategies (EXP)	
30. Talent management (EXP)	
V. Nursing knowledge	VI. Personality
38. Clinical skills (COMP.)	45. Serve as a model (EXP)
39. Standard nursing practice (COMP)	46. Awareness of personal strengths and weaknesses (V. COMP)
40. Nurse research (V. COMP)	47. Strategic vision (EXP)
41. Nursing theories (COMP)	48. Personal and professional balance (V. COMP)
42. Care planning (V. COMP)	49. Compassionate (V. COMP)
43. Nursing training planning (V. COMP)	50. Emotional intelligence (EXP)
44. Professionalism (EXP)	51. Integrity (EXP)

Abbreviations: Comp, competent; Exp, expert; V.Comp, very competent.

This proposal coincides with that of AONE, which uses the competent, proficient and expert levels for the development of competencies, and highlights how these levels are achieved through master's or doctoral studies (Crawford et al., 2017; Waxman et al., 2017). Furthermore, the results of the present study emphasize the need for a high level of competence development, similar to the conclusion of Sandehang et al. (2019) and Clark (2012), who stated that the nurse executives required a deep development of competencies beyond the field of nursing.

During Delphi rounds 3 and 4, the expert panel reached a consensus on the training that the nurse executives should develop at the executive level for the three levels of competencies ('expert', 'highly competent' and 'competent'). The 'competent' level is

achieved through continuous training, the 'Experto Universitario' and the university specialization diploma. Regarding the 'highly competent' level, a consensus was reached relating to the 'Experto Universitario', the university specialization diploma or the master's degree. Finally, the 'expert' level is achieved through master's and doctoral studies. Rizany et al. (2018) point out that the competency of nurse executives was greater when they have developed advanced studies (master's or doctorate), in addition to having experience in a wide field of changing environments (Clark, 2012). These results involve university institutions, given that the evidence points to the fact that the training required for nurse executives is fundamentally of a university nature and that these organizations are responsible for the development of training programmes. The

FIGURE 2 Dimensions of the nurse executive competency model**TABLE 3** Level of competencies development and training

	Univ. Ext.	Cont. Ed	Univ. Exp.	Univ. spec. D	Master	Ph.D.
Novice	100%					
Noviced advance	90%	98%				
Competent		90%	90%	96%		
Very competent		96%	100%	96%	96%	
Expert					96%	96%

Abbreviations: Cont. Ed, continuing education; Master, Master's degree; Univ. Exp., university expert; Univ. Ext., university extension diploma; Univ. Spec. D., university specialization diploma.

competency model is a guide for the development of training at the level of university expert, university specialist, master's degree and doctorate for the executive manager.

The PCA verified the competency model for nurse executives at the operational levels, evidencing the importance of competencies that defined the three main components: communication (communication skills, relationship management and conflict management), leadership (leadership skills and team management) and decision-making (decisions based on ethical principles). The eigenvalue obtained confirms the importance of the relationship between decision-making and ethical principles (Loreggia et al., 2018), the need for strong leadership in working teams (Berrios Martos et al., 2008) and communication as a fundamental factor for conflict resolution (Garman et al., 2006).

The communication skills expected from nurse executives should include the ability to transmit critical thinking, make nursing teams reflect before acting (Scoble & Russell, 2003) and facilitate conflict resolution and shared decision-making, as well as the creation, participation and management of teams (Garman et al., 2006).

4.1 | Limitations

This study included competencies from very different environments, where the role of nurse executives was not understood in the same way. To overcome this limitation, the levels of consensus necessary to validate the competencies in the Spanish health system were raised.

TABLE 4 Factor structure of the proposed competency model

Management dimension				
	CP 1	CP2	CP3	CP4
Result orientation	0.789			
Strategic management	0.725			
Innovation	0.710			
Legal aspects		0.936		
Analytical thinking		0.554		
Organizational management			0.968	
Decision-making				0.980
Explained variance	32.325%	18.075%	12.822%	11.569%
Eigenvalue	2.263	1.265	0.898	0.810
α Cronbach				0.631
Communication and technology dimension				
	CP 1	CP2	CP3	CP4
Listening	0.905			
Information systems and computers	0.679			
English medium level of writing		0.874		
Technology		0.636		
Feedback			0.88	
Communication skills			0.589	
Evaluation of information and its sources				0.826
Explained variance	31.326%	17.341%	16.065%	13.076%
Eigenvalue	2.193	1.214	1.125	0.915
α Cronbach				0.6
Leadership and teamwork dimension				
	CP 1	CP2	CP3	CP4
Change management	0.812			
Influence	0.802			
Lidership	0.703			
Delegater	0.696			
Collaboration and team management skills		0.85		
Critical thinking		0.786		
Team building strategies		0.736		
Career planning		0.707		
Ethical principles			0.885	
Power and empowerment			0.765	
Conflict management				0.936
Explained variance	46.309%	12.796%	10.286%	8.17%
Eigenvalue	5.094	1.408	1.131	0.899
α Cronbach				0.876
Knowledge dimension of the health care system				
	CP 1	CP2		
Quality and safety	0.971			
Quality and improvement processes	0.948			
Identification and responsibility with the organization		0.917		
Health policy		0.838		

TABLE 4 (Continued)

Knowledge dimension of the health care system		
	CP 1	CP2
Explained variance	57.954%	29.970%
Eigenvalue	2.318	1.199
α Cronbach		0.749
Nursing knowledge		
	CP 1	
Nursing training planning	0.918	
Nurse research	0.910	
Nursing theories	0.822	
Clinical skills	0.777	
Explained variance	73.733%	
Eigenvalue	2.949	
α Cronbach		0.808
Personality		
	CP 1	CP2
Awareness of personal strengths and weaknesses	0.905	
Strategic vision	0.891	
Personal and professional balance	0.836	
Compassionate		0.884
Emotional intelligence		0.735
Explained variance	54,76%	21,705%
Eigenvalue	2,738	1,085
α Cronbach		0,809

Abbreviation: CP, principal component.

5 | CONCLUSIONS

This study proposes a competency model for nurse executives. Nurse executives must develop all these competencies (as relevant to their practice) in today's rapidly evolving health-care system. In conclusion, this study yielded a consensus on 51 competencies necessary in nurse executives, from which the following competencies: decision-making; relationship management; communication; listening; leadership; conflict management; ethical principles; collaboration and team management; orientation to leadership and good governance of health organizations should be highlighted and based on the social responsibility of health professionals. Nurse executives are responsible for aligning the mission, vision and values of their organizations and managing its resources. The health outcomes will depend on their ability to develop the required competencies. Therefore, nurses or nurse managers at other functional levels should not be promoted to the role of nurse executives without advanced management training.

The study indicates the precise level of development required for each of the competencies of nurse executives. The nurses should develop these competencies before being promoted to roles, such as nurse executives.

Any nurses wishing to develop their professional careers as nurse executives must first develop the competencies shown in the proposed model.

This study also indicates the training needed by senior management to develop the required competencies. Both, the nurses who want to be promoted to nurse executives and the nurses currently at this level, should follow the educational programmes specified in this study, to adapt their knowledge to this role's requirements.

CONFLICT OF INTEREST

There is no conflict of interest.

AUTHOR CONTRIBUTIONS

Alberto González, Pilar Marqués and Arrate Pinto designed the study and wrote the research protocol. Alberto González did the acquisition of data. Alberto González and Arrate Pinto did the statistical analysis. Alberto González, Pilar Marqués, Arrate Pinto and Silvia Pérez prepared the manuscript draft. Pilar Marqués, Arrate Pinto and Silvia Pérez supervised the survey and checked the data. All authors contributed to the revisions in depth for the manuscript and approved the final manuscript.

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