Original Article

Competencies for training advanced practice nurses in primary health care

Competências para a formação do enfermeiro de prática avançada para a atenção básica de saúde

Competencias para la formación del enfermero de práctica avanzada para la atención primária de salud

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Abstract

Objective: To determine a set of core competencies for advanced practice nurses in primary health care in Latin America and the Caribbean.
Methods: This is a descriptive quantitative study, with a qualitative data analysis, conducted in 2017. A total of 830 nurses from Latin America and the Caribbean participated. A questionnaire with seven domains, dimensions and competencies of advanced practice nurses was used for collecting data. Descriptive statistics were used for the data analysis.
Results: Of the 830 nurses that completed the survey, 40.7% held a position in education, 41.4% worked in clinical areas, and 17.8% occupied managerial or ministerial positions. In terms of education level, 45.7% had master's degrees and 17.3% had doctorates. Of the 64 competencies assessed, 58 were considered core competencies in the training of advanced practice nurses and five as indispensable or not relevant.
Conclusion: The study presented a set of core competencies of advanced practice nurses and contributed to the discussion on core competencies in primary health care. The higher the level of education, the greater the tendency to consider the competencies of ethics and research as relevant, whereas the competency to prescribe drugs was only considered relevant by participants from countries where the role of advanced practice nurses is regulated. The proposed competencies must be framed within a specific context and regulated by the laws of each country.

Resumo

Objetivo: Determinar um conjunto de competências centrais para a formação do enfermeiro de prática avançada na atenção básica de saúde, na América Latina e no Caribe.
Métodos: Estudo quantitativo descritivo, com análise qualitativa de dados, realizado em 2017. Participaram 830 enfermeiros da América Latina e do Caribe. Para a coleta de dados, utilizou-se um questionário com sete domínios, dimensões e competências do enfermeiro de prática avançada. A análise dos dados foi realizada por meio de estatística descritiva.
Resultados: Dos 830 enfermeiros que responderam à pesquisa, 40,7% ocupavam um cargo na área da educação; 41,4% trabalhavam em áreas clínicas e 17,8% ocupavam cargos de direção ou ministeriais. Quanto à escolaridade, 45,7% apresentavam mestrado e 17,3%, doutorado. Das 64 competências avaliadas, 59 foram consideradas centrais para a formação do enfermeiro de prática avançada e cinco como não indispensáveis ou muito relevantes.
Conclusão: O estudo apresenta um conjunto de competências centrais para o enfermeiro de prática avançada e contribui para a discussão sobre as competências centrais em sua formação na Assistência Primária à Saúde - APS. Quanto maior a escolaridade dos indivíduos, mais marcada foi a tendência de considerar as competências de ética e pesquisa relevantes, enquanto que a competência de prescrever medicamentos foi considerara relevante apenas para participantes cujos países regulamentam o papel de enfermeiros de prática avançada. As competências propostas devem ser consideradas dentro do contexto específico e regulado pela legislação de cada país.

Resumen

Objetivo: Determinar un conjunto de competencias centrales para la formación del enfermero de práctica avanzada en la atención primaria de salud en América Latina y el Caribe.
Métodos: Estudio cuantitativo descriptivo, con análisis cualitativo de datos realizado en 2017. Participaron 830 enfermeros de América Latina y el Caribe. Para la recolección de datos se utilizó un cuestionario con siete dominios, dimensiones y competencias del enfermero en práctica avanzada. Para el análisis de los datos se utilizó la estadística descriptiva.
Resultados: De los 830 enfermeros que respondieron a la encuesta, 40,7% desempeñaban un cargo en el área de la educación; 41,4% trabajaban en áreas clínicas y 17,8% ocupaban cargos directivos o ministeriales. En cuanto a su nivel educativo, 45,7% contaban con maestría y 17,3% con doctorado. De las 64 competencias evaluadas, 59 fueron consideradas como centrales en la formación del enfermero de práctica avanzada y cinco como no indispensables omuy relevantes.
Conclusión: El estudio presenta un conjunto de competencias centrales del enfermero de práctica avanzada y contribuye a la discusión sobre las competencias centrales en su formación en la APS. A mayor nivel educativo del participante, fue más marcada la tendencia a considerar relevantes las competencias de ética e investigación, mientras que la competencia para prescribir medicamentos, fue considerada relevante exclusivamente para los participantes de países donde está reglamentado el rol de enfermeros de práctica avanzada. Las competencias propuestas deben enmarcarse en un contexto específico y regulado por la legislación de cada país.

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Introduction

In 2013, the Pan American Health Organization (PAHO/WHO) approved the Resolution CD52.R13 Human resources for health: Increasing access to qualified health workers in primary healthcare-based health systems, which urges countries to strengthen interprofessional health teams and to enhance competencies and the scope of practice of these teams to the maximum. It specifically proposes to "increase the number of seats in training programs in the health professions relevant to primary health care (PHC), including family doctors, advanced practice nurses and non-physician clinicians."[1]

In its 53rd Board of Directors meeting in 2014, PAHO/WHO approved the strategy for universal access to health and universal health coverage. This strategy recognizes the importance of primary health care and urges countries to increase investments at the primary care level, in order to improve the ability to resolve medical issues, increase access and progressively expand the provision of services, for timely coverage of health needs. [2]

During the 29th Pan American Sanitary Conference in September 2017, the countries approved a human resources strategy which determined that innovative alternatives for facing challenges - such as rotation and switching tasks, advanced practices, creation of new professional profiles, and the use of telehealth - were limited in their development in the region. [3]

Despite profound imbalances and gaps in terms of availability, distribution, composition, competence and productivity of human resources in health, especially at the primary care level, registered nurses can play a key role at this level.[4] Expanding the role of nurses through the incorporation of advanced practice nurses (APN) in PHC could ensure the population's access to qualified health professionals.

Advanced practice nurses are registered nurses with postgraduate studies. When they are part of interprofessional teams that provide primary care services, they contribute to the management (care) of patients with mildly acute diseases and chronic disorders, in accordance with guidelines in clinical protocols and guides. [5,6]

The scope of practice of APN enables nurses at the PHC level to operate with a degree of autonomy in making decisions, including diagnoses and treating patients' disorders. The International Council of Nurses defines an APN as "a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is licensed to practice."[5]

In countries such as the United States and Canada, APN has proven to be cost-effective, in addition to providing safe, quality care.[7,8] This category is recognized and regulated in more than 50 countries. However, in Latin American and some countries in the Caribbean,[9] despite lack of formal training or corresponding regulations, many registered nurses engage in work that transcends their scope of practice, in response to the growing needs of the population they serve.

In this context, PAHO/WHO has carried out several activities to discuss expanding the role of nurses in PHC, such as events, online seminars and different publications.

The objective of this study is to determine a set of core competencies for advanced practice nurses in PHC in Latin America and the Caribbean. It is justified by the lack of consensus in the region regarding the core competencies for training advanced practice nurses.

Methods

This is a descriptive quantitative study, with a qualitative data analysis, which was conducted in 2017. The study population was comprised of nurses, professors, presidents of national associations and nurses working in ministries of health of countries from the region of the Americas. The PAHO/WHO database in Washington D.C. was used for inviting the participants, who received an email which also provided instructions on how to proceed with the survey. They were also asked to invite other professionals with the same profile. The sample was non-probabilistic, with a total of 830 participants

from 31 countries (Argentina, Bahamas, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, United States, Granada, Guatemala Guyana, Honduras, Cayman Islands, Turks and Caicos Islands, Martinique, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Venezuela, Dominican Republic, Suriname, Trinidad and Tobago and Uruguay). The Chief Nurse Officer and the Permanent Commission of Nursing of the Ministry of Health of Mexico widely disseminated the survey in the country.

The data collection instrument included the PAHO/WHO definition of APN. The participants were then requested to provide sociodemographic information, such as country, position and level of education, as well as an assessment of 64 competencies.

To determine the core competencies that would be assessed, a literature review was conducted with the descriptors and keywords "advanced practice nurse", "professional competencies" and "community health". In a meeting, a group of experts from PAHO/WHO identified and analyzed six official documents[10-15] from associations or governments that stipulated the core APN competencies in their countries or regions.

Based on these documents, a team of experts in advanced practice nursing from PAHO/WHO and nursing professionals from Chile, Mexico, and Spain selected a set of competencies that were initially classified into 15 domains and then reduced to eight. In a third stage, the experts performed another review of each competency and domain, which included linguistic adjustments and the context of APN. This stage reduced the number of competencies to the following seven: (1) Care management: (a) care focus, with three competencies; (b) assessment and diagnosis, with seven competencies, and (c) provision of care, with ten competencies; (2) Ethics, with four competencies; (3) Interprofessional collaboration, with six competencies; (4) Health promotion and prevention, with nine competencies; (5) Evidence-based practice, with six competencies; (6) Research, with five competencies and (7) Leadership, with 14 competencies.

A box was also added for comments and suggestions from the participants. A response was required every survey item, except for the comments box.

The same team validated the content of the final instrument, which native translators translated and back-translated from the original into Spanish, English, and Portuguese.

For its application, the participants were requested to complete the survey based on the following question: "How relevant is this competency to be considered a core APN competency for PHC in Latin American and Caribbean countries? A six-point Likert scale was used: does not apply; not at all relevant; not very relevant; relevant; very relevant; and indispensable.

The survey was available for four weeks on SmartSurvey® in three languages: Portuguese, Spanish and English. Lastly, the electronic link was sent to the participants, requesting them to respond in full to the survey.

The invitation included a paragraph clarifying that completing the survey implied informed consent, and it ensured the anonymity and safekeeping of information related to their identity and institution. This anonymity enabled participants to freely express their opinions. They were also free to withdraw at any time, in which case the survey was not included in the analysis.

Quantitative data analysis included frequency distributions and proportions, expressed in percentages. The differences in proportions among the groups were calculated, with a statistical significance level of $p \leq 0.05$ using STATA® and Excel. It was agreed that to qualify as a competency at least 70% (cut-off point) of the responses had to be "indispensable" or "very relevant". An itemized analysis was performed for the competencies that did not achieve 70%.

With respect to the qualitative analysis, a researcher who did not participate in the quantitative analysis examined the content. He identified the significant units of analysis, analyzed and organized them into codes and categories. The team of researchers met to triangulate and validate the analysis.

Results

Of the 830 (57%) participants, 84.7% (n=703) responded to the survey in Spanish, 9.9% (n=82) in English and 5.4% (n=45) in Portuguese. Table 1 presents the characteristics of the study participants.

Table 1. Characteristics of the study participants

Variables	n(%)
Language	
English	82(9.9)
Portuguese	45(5.4)
Spanish	703(84.7)
Position	
Academic	259(31.2)
Nursing program manager	79(9.5)
Health institution director/high-ranking manager	100(12)
Clinical nurse/mid-range manager	244(29.4)
Ministry of health employee/public policies/cities	75(9)
Other	73(8.8)
Level of education	
Undergraduate degree	207(24.9)
Specialization	100(12.0)
Master's degree	379(45.7)
Doctorate	144(17.3)

Responses were obtained from most of the countries in the region; a majority of the Mexican nurses participated, 51.6% (n=428), followed by the Colombians (9.5%) and Brazilians (8.7%). The responses from Brazil (8.7%), Canada (4.7%), Colombia (9.5%), Chile (5.7%) and Mexico (51.6%) were examined separately due to the number of participants. The responses from the rest of the countries were grouped into a single category. Another analysis grouped the responses by countries that had APN (Canada, United States and countries from the Caribbean and Latin America: Bahamas, Belize, Guyana, Cayman Islands, Turks and Caicos Islands, Martinique, Suriname and Trinidad and Tobago) and those that did not (Argentina, Bolivia, Brazil, Colombia, Cuba, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela).

In the overall analysis, if the sum of "indispensable" and "very relevant" constituted 70% of the responses, this was considered to indicate a high degree of consensus in relation to relevance. Above the cutoff point, the competency was considered to be a core competency. The analysis showed that there was a high degree of consensus regarding the relevance of 59 competencies.

Of the 64 competencies, the following five did not achieve this cutoff point: Use technological systems for capturing data from variables for assessing patients (No. 5); Prescribe drugs within one's scope of practice (No. 17); Design research projects that meet the criteria established by financing agencies (No. 48); Conduct research individually or with others (No. 49); and Disseminate research findings among various audiences using appropriate formats (No. 50). Consequently, it was decided to carry out a more detailed analysis.

In the analysis of the seven domains into which the competencies were grouped, all of them, with the exception of research (65.4%), were considered indispensable or very relevant, with proportions exceeding 80% (Table 2).

Care management-related domain has three groups of competencies: (a) care focus; (b) assessment and diagnosis, and (c) provision of care (Table 2). In turn, the last one has three competencies, which more than 85% of the participants considered to be indispensable or very relevant. On the other hand, 80% considered that six competencies from the assessment and diagnosis group were indispensable or very relevant in APN practices, whereas 62.2% felt that the seventh "Use technological systems for capturing data from variables for assessing patients," was also indispensable or very relevant. Nine competencies from the group related to provision of care were considered indispensable or very relevant, and 52% of the participants considered the tenth "Prescribe drugs within one's scope of practice (regulations and protocols/national programs)" as indispensable or very relevant.

In relation to the competencies from the ethics domain, between 82% and 93.3% considered them indispensable or very relevant. However, participants with a higher level of education considered ethical aspects to be more relevant.

In the domain of interprofessional collaboration, the six competencies ranged in score from 76% to 91%, and they were considered indispensable or very relevant. The competency "Collaborate

Table 2. Percentage breakdown of domains and competencies

Domain / Competency	Indispensable or very relevant (%)	Relevant (%)	Slightly or not at all relevant, or does not apply (%)
Domain - Care management	**80.7**	**13.4**	**5.9**
a. Care management: care focus			
1. Incorporate knowledge about cultural diversity and health determinants in the assessment, diagnosis and therapeutic treatment of patients and in evaluating the outcome.	85.7	11.2	3.1
2. Incorporate knowledge about development and stages of life, physiopathology, psychopathology, epidemiology, environmental exposure, infectious diseases, behavioral sciences, demography and family processes, when performing assessments, making diagnoses and providing therapeutic management.	87.1	11.1	1.8
3. Incorporate knowledge about clinical manifestations of normal health events, diseases/serious injuries, chronic diseases, comorbidities and health emergencies, including the effects of multiple etiologies in the assessment, diagnosis and therapeutic management of patients and in evaluating the outcome.	85.8	12.3	1.9
b. Care management: assessment and diagnosis			
4. Use advanced assessment skills to distinguish between normal, variations of normal and abnormal findings.	84.2	13.6	2.2
5. Use technological systems for capturing data from variables for assessing patients.	62.2	25.5	12.3
6. Obtain and accurately document the relevant history of patients in each stage of life and family life cycle, using collateral information, if necessary.	80.1	15.7	4.2
7. Accurately carry out and document appropriate physical tests or those focused on the symptoms of patients of all ages (including developmental and behavioral screening, physical tests and mental health assessments).	81.3	14.9	3.7
8. Identify health and psychosocial risk factors for patients of all ages and families in all stages of the family life cycle.	83.7	14.2	2.0
9. Perform different diagnoses for acute, chronic and vital risk conditions.	79.3	14.9	5.4
10. Plan screening and diagnostic strategies using appropriate technologies as a tool, taking into consideration costs, risks and benefits for patients.	72.0	19.8	8.2
c. Care management: provision of care			
11. Provide consistent care as set forth in clinical guides and protocols.	87.3	10.7	1.9
12. Provide care that respects and promotes cultural diversity.	88.8	9.6	1.6
13. Effectively communicate clinical findings, diagnoses and therapeutic interventions.	89.5	8.6	1.9
14. Determine care options and formulate a therapeutic plan in collaboration with patients, taking into account their expectations and beliefs, available evidence and the cost-effectiveness of the interventions.	85.2	11.8	3.0
15. Integrate quality and patient safety principles in clinical practices.	91.7	6.5	1.8
16. Initiate a therapeutic plan with pharmaceutical and non-pharmaceutical interventions, treatments and therapies.	76.9	14.2	8.9
17. Prescribe drugs within one's scope of practice (regulations and protocols/national programs)	52.8	16.0	31.2
18. Monitor the patient's progress, assessing and adjusting the therapeutic plan according to the patient's responses.	81.7	10.8	7.5
19. Adapt interventions in order to meet the needs of people and families, in relation to aging, life transitions, comorbidity and psychosocial and financial situations.	83.0	11.9	5.1
20. Formulate an appropriate palliative or end-of-life plan.	75.8	13.1	11.1
Domain - Ethics	**86.7**	**10.5**	**2.8**
21. Create a therapeutic environment that allows patients to freely discuss health issues.	82.4	13.5	4.1
22. Facilitate to enable families to make their health decisions.	83.4	13.0	3.6
23. Integrate ethical principles into decision making.	93.3	5.9	0.8
24. Recognize moral and ethical dilemmas and acts appropriately, if necessary.	87.8	9.6	2.5
Domain - Interprofessional collaboration	**82.9**	**13.8**	**2.9**
25. Collaborate with the rest of the health team in promoting patient-focused, interprofessional care.	91.9	18.6	5.4
26. Act as a consultant, accepting referrals from health team professionals, community agencies and other professionals outside the health system.	76.0	15.8	2.3
27. Coordinate interprofessional teams for providing patient care.	79.3	13.5	2.7
28. Promote learning opportunities among health team members to optimize patient care.	83.9	16.1	2.5
29. Establish a collaborative relationship with health service providers and community services.	81.3	11.8	3.1
30. Consult and/or refer patients to other health service providers at any time during the care process, when the patient's condition is not within the nurse's scope of practice.	85.1	13.4	5.4
Domain - Promotion and prevention	**85.5**	**11.2**	**3.4**
31. Participate in the development and implementation of local health promotion programs.	81.2	11.0	3.9
32. Select, implement and assess evidence-based strategies for primary, secondary and tertiary health promotion and prevention.	85.2	9.3	2.9
33. Seek to empower individuals, groups, and communities to adopt healthy lifestyles and self-care.	87.8	10.7	2.3
34. Appropriately interpret technical and scientific information for the different needs of patients.	87.0	8.9	1.9
35. Assess the educational needs of patients and caregivers for providing personalized and effective health care.	89.2	11.9	2.3
36. Provide training for patients and/or caregivers to bring about positive changes of behavior.	85.8	9.5	2.5
37. Provide training and personalized educational interventions on benefits, interactions and the importance of treatment adherence, as well as recommendations for follow-up and self-management.	88.0	10.5	2.8
38. Provide training and personalized educational interventions on personal responses to nurses, disorders, health conditions, injuries and risk factors, including lifestyle changes and therapeutic interventions.	86.7	15.3	6.5

Continuation.

Domain / Competency	Indispensable or very relevant (%)	Relevant (%)	Slightly or not at all relevant, or does not apply (%)
39. Develop suitable educational materials based on the language and cultural beliefs of the patient.	78.2	12.5	4.0
Domain - Evidence-based nursing	**83.0**	**13.1**	**3.9**
40. Incorporate research findings and other forms of knowledge to improve nursing processes and results.	83.5	10.4	2.4
41. Seek the best evidence to improve health outcomes.	87.2	11.2	3.0
42. Study clinical guides for their individual application in nursing practices.	85.8	13.9	5.3
43. Implement algorithms, clinical guides and evidence-based courses of action.	80.8	16.9	4.8
44. Act as a change agent through implementation of translational knowledge and dissemination of new knowledge, which may include formal presentations, publications, informal discussions and development of best clinical practices and policies.	78.3	13.7	3.9
45. Use effective strategies for changing professional and work team behavior, promoting the adoption of evidence-based practices and innovations for providing health care.	82.4	18.7	7.6
Domain - Research	**65.4**	**20.9**	**13.6**
46. Identify clinical issues that could be resolved through research.	73.7	18.4	10.0
47. Select qualitative or quantitative research strategies tailored to the nature of the problem to be studied.	71.6	25.1	21.8
48. Design research projects that meet the criteria established by financing agencies.	53.1	21.1	14.8
49. Conduct research individually or with others.	64.1	21.3	14.0
50. Disseminate research findings among various audiences using appropriate formats.	64.7	10.4	2.7
Domain - Leadership	**81.4**	**12.6**	**4.5**
51. Distinguish one's scope of practice from the other professionals on the health team.	87.0	1.6	1.1
52. Work autonomously and independently, handling diagnosed or still not diagnosed patients.	70.7	15.5	13.7
53. Document all aspects of care delivered to patients in accordance with the existing legal framework.	88.6	9.4	2.0
54. Implement strategies for integrating and optimizing patient care in health teams within the system.	84.9	12.5	2.5
55. Engage in advocacy to create organizational environments that support patient safety, collaborative practices and professional growth.	77.6	16.3	6.1
56. Promote the formulation of policies and standards that contribute to the development of APN.	75.2	15.8	9.0
57. Demonstrate critical thinking skills when faced with complex clinical situations.	90.1	8.7	1.2
58. Demonstrate the ability to influence by using critical and reflective thinking and defending one's decisions in a structured and well-grounded manner.	81.7	10.1	1.2
59. Assess the relationship between access, cost, quality and safety and their influence on health care.	78.7	16.4	4.9
60. Analyze the organizational structure, functions, and resources for improving the provision of care.	80.6	15.5	3.9
61. Identify improvement needs in the provision of health care.	86.5	11.4	2.0
62. Identify gaps and opportunities and formulate evidence-based recommendations to improve processes and practices.	82.8	13.1	4.1
63. Work with communities, identifying needs and advocating for health services able to meet these needs.	77.0	15.8	7.2
64. Design and implement knowledge management strategies to improve health care using appropriate technologies.	78.1	16.6	5.3

with the rest of the health team in promoting patient-focused, interprofessional care" obtained the highest percentage (91.9%).

In the domains of promotion and prevention and evidence-based nursing, 70% ranked the competencies as indispensable or very relevant.

With respect to the research domain, 70% considered that three of its five competencies were indispensable or very relevant.

The analysis of the 14 competencies comprising the leadership domain indicated a consensus of the participants in terms of their relevance, and considered them to be core APN competencies.

The five competencies that did not achieve the cutoff point were examined separately. The participants' responses were considered from the perspective of level of education and position,

from those countries with and without APN (Table 3).

Table 4 shows the percentage of "indispensable" or "very relevant" responses, according to the characteristics of the five competencies examined.

The competency "Use technological systems for capturing data" did not quite qualify as a core APN competency (62.2%). In the itemized analysis in countries with and without ANP, it was also not considered a very relevant competency and no significant differences were found (p=0.35) among the responses of participants with (62.5%) and without APN (62.1%).

When examining this competency according to the educational level of the participants, it was noted that those with master's degrees or doctorates considered it more relevant than the others did.

Table 3. Percentage of "indispensable" or "very relevant" responses for the competencies that did not achieve the cutoff point. Participants from countries with or without APN (p=0.35)

Competencies	With APN in their countries (n= 80) %	Without APN in their countries (n= 750) %
Use technological systems for capturing data from variables for assessing patients.	62.5	62.1
Prescribe drugs within one's scope of practice (regulations and protocols/national programs)	78.8	50.0
Design research projects that meet the criteria established by financing agencies.	32.5	55.3
Conduct research individually or with others.	37.5	66.9
Disseminate research findings among various audiences using appropriate formats.	41.3	67.2

With respect to country, participants from Canada and Brazil considered it indispensable (89.7%) and very relevant (79.2%). Participants from Mexico (47.2%), Colombia (46.8%), Chile (48.9%) and other countries (50.9%) did not consider it relevant.

The participants considered that the use of technological systems to capture data is important for ANP because it facilitates the nursing care process and streamlines health services in relation to patient assessments. They also reported that it is essential

for fields of research. Following are some examples of the expressed opinions.

"Health institutions and even primary care centers in suburban areas and some rural areas increasingly have computer teams which [enables] creating databases by families and [generating] electronic files for families for capturing data, following up on individuals in the files and [avoiding] the use of paper, in addition to facilitating file management, [making] information more accessible and pertinent. Through using information from databases, nurses can generate epidemiological studies, case-control, unique cases, finding families located in areas that could be endemic, or for mass vaccination campaigns. Information is a source for generating research." (Participant 70)

"The use of technological systems is relevant, because they are tools that facilitate information analysis processes that result in patient care. However, their importance depends on whether those using them really know how to manage the information. If a nursing professional does not know how to report

Table 4. Proportion of "indispensable" or "very relevant" responses that did not achieve the cutoff points, by characteristics of the country, according to the participants' level of education and position

Characteristics	Competencies				
	Use technological systems for capturing data from variables for assessing patients.	Prescribe drugs within one's scope of practice (regulations and protocols/national programs)	Design research projects that meet the criteria established by financing agencies.	Conduct research individually or with others.	Disseminate research findings among various audiences using appropriate formats.
	%	%	%	%	%
Level of education					
Doctorate (n=144)	60.4	67.4	58.3	67.4	68.1
Master's degree (n=379)	68.1	55.7	58.6	71.5	72.8
Specialization (n=100)	54.1	41.5	40.6	50.7	50.2
Undergraduate (n=207)	59.0	44.0	51.0	59.0	59.0
Position					
Academic (n=259)	61.4	54.1	58.3	75.7	73.7
Nursing program director (n=79)	75.9	59.5	65.8	81.0	78.5
Health institution director/high-ranking manager (n=100)	62.0	52.0	55.0	66.0	66.0
Clinical nurse/mid-range manager (n=244)	55.7	49.2	41.4	45.9	49.2
Ministry of health employee/public policies/ cities (n=75)	66.7	50.7	54.7	58.7	65.3
Other (n=73)	67.1	56.2	56.2	68.5	67.1
Total	62.2	52.8	53.1	64.1	64.7

on paper or determine which information about the patient is truly important, it won't make any difference to have advanced technological resources for assessing patients." (Participant 83)

Another aspect mentioned was the difficulty or lack of technological resources. Many participants stated that data was recorded manually due to lack of more appropriate tools.

"Data is captured through physical sources, such as clinical histories, which are recorded manually, due to difficulties accessing technologies in dispersed rural areas." (Participant 38)

"Until now, everything has been done manually and even assessment records are only on paper." (Participant 39)

The competency related to prescribing drugs within the scope of practice of APN did not achieve a consensus, since only half of the participants considered it to be indispensable or very relevant. However, in the itemized analysis among participants from countries with and without ANP it was found that, in the former, the participants felt it is an indispensable or very relevant core competency (78.8%), whereas those from countries without APN did not (50%).

The higher the participant's level of education, the greater the relevancy of the competency: doctorate (67,4%), master's degree (55,7%), specialization (44%) and undergraduate degree (55.7%), and these differences were significant ($p<0.05$). It should also be noted that, in the case of undergraduate and specialization levels, the category for "does not apply" was 17%. However, in the breakdown of opinions according to the participants' position, there were no statistically significant differences ($p=0.6$).

It is also necessary to point out that, in most of the countries, nurses do not have the authority to prescribe drugs due to lack of regulations for this activity, which may have influenced the answers.

This competency was considered relevant by some professionals because it could serve as a strate-

gy to improve clinical processes in the continuity of treatments, in addition to contributing to universal access to health care. However, the participants were subject to limitations in this practice and, thus, there is a need to establish national programs and regulations. On the other hand, university nursing courses must be adapted in order to train these professionals:

"It would be very relevant if laws could be changed to allow advanced practice nurses to prescribe drugs in Latin American countries." (Participant 4)

"The scope of practice is relative. However, it is essential to abide by the laws of the states and provinces which regulate nursing practices in a specific jurisdiction and/or geographical area." (Participant 129)

"In Chile, they cannot prescribe drugs. However, if the laws could be changed, the competency would be indispensable. It doesn't make much sense since, besides physicians, midwives in Chile can prescribe drugs (the entire ranges of injectable and oral contraceptives)." (Participant 30)

"Prescribing drugs is essential for advanced practice nurses and could contribute to universal access to health care and enable them to work autonomously. Many countries have advanced practice nurses that safely prescribe drugs. They have been taught how to do it." (Participant 113)

"We need to adjust our undergraduate and graduate studies curricula. Nursing programs in Brazil do not allow this practice." (Participant 39)

It was observed that in countries with regulations and laws for nurses to prescribe drugs, barriers persisted, such as lack of knowledge on the part of these professionals and the reality of the health services that hindered such practices.

Some participants felt that prescribing drugs is not a nursing competency. It is possible they did not view prescribing drugs as a relevant ANP competency due to the type of knowledge they possessed and

because of limitations imposed by national laws on nursing practices and the reality of the health services.

> *"Drugs are not prescribed, but nurses are supposed to inform, explain and check whether users understood all aspects related to administration, precautions and warning signs, as well as answer any questions." (Participant 79)*

> *"It's supposedly regulated, but [within] the reality of the services drugs are not prescribed, which limits expanding the role of nurses." (Participant 31)*

In the analysis of the competencies that did not achieve a 70% consensus, "Design research projects that meet the criteria established by financing agencies" was considered relevant by 32.5% of the participants from countries with APN and by 55.3% of those without. In this case, it was also observed that the higher the participants' level of education, the greater the relevance attributed to the competencies of this study.

In the breakdown down by position, it was found that program directors and faculties tended to consider these competencies to be relevant, even though they failed to achieve the cutoff point. It was also observed that the higher the level of education of the participants, the greater the relevance assigned to these competencies: 58.3% at the master's degree level, 40.6% in the case of specializations and 51% among those with undergraduate degrees.

The competency "Conduct research individually or with others" also failed to achieve a consensus as indispensable or very relevant (64.1%), but there were significant differences according to position: for faculties (75.5%) and program directors (81%), it was more relevant (p=0.000). In the analysis based on the participants' level of education, it was found that the higher the level, the greater the relevance attributed.

The competency "Disseminate research findings among various audiences using appropriate formats," also failed to obtain a consensus of 70%. There were some differences between the groups: 41.3% of the participants from countries with APN

and 67.2% of those without APN, considered it to be indispensable or very relevant. In regard to level of education, most of the participants gave it more relevance. In the case of faculties and nursing program directors, there was a consensus to include it: 73.7% and 78.5%, respectively.

In the research domain, it was found that the competency "Design research projects that meet the criteria established by financing agencies" was difficult for participants to interpret, due to the fact that they considered it as relevant or less relevant according to their own experiences, and not necessarily as a core APN competency.

Some participants expressed that designing research projects was indispensable in the scope of practice, but there were opinions in the sense of professionals using research but not necessarily producing it.

> *"If the academic degree for APN is [a] specialization, the answer would be relevant; if it's [a] master's degree, it would be very relevant, and if it is a doctorate, it would be indispensable." (Participant 21)*

> *"Not all projects are eligible for financing, but they are very relevant for professional practice." (Participant 8)*

> *"I think they are important. But clinicians can use research instead of producing it." (Participant 10)*

However, they mentioned difficulties in training professionals, inadequate working hours and limited resources for developing projects, especially in the case of funding agencies. Others noted that carrying out research could distract nurses from their professional practice.

> *"There is a lack of preparation in research, as well as preparation and practice to apply funds, and practice in developing quality research." (Participant 17)*

> *"... but I think it would distract her from her main objective." (Participant 4)*

"It's not feasible; the logistics pass through too many bureaucratic and political filters, in addition to the work overload, and this hinders it from carried out." (Participant 37)

The competency "Conduct research individually or with others" showed that teamwork facilitates the practice in PHC.

The participants who considered conducting research a core competency stressed the importance of teamwork for strengthening professional practice.

"Group research is more effective because a problem is analyzed from various perspectives; it is undeniable that research is essential." (Participant 14)

"It is important to carry out interdisciplinary and inter-institutional research." (Participant 17)

As for the qualitative data of the competency "Disseminate research findings among various audiences using appropriate formats," the participants considered it to be important, although it is still in development.

"To fulfill its purpose, research must be disseminated, published and presented at scientific events. In relation [to] advanced practice, it is still in the beginning stages." (Participant 8)

Discussion

This study presents a framework of core APN competencies, based on a consensus by participants from 31 countries from the Americas. The level of education of the participants was similar to the study by Sastre-Fullana,[16] where 45 experts with master's degrees (41%) and doctorates (20%) were consulted. The lack of an international consensus for a precise definition of the competencies associated with the roles of advanced practice nurses has prompted further studies to define them.[17]

The literature has identified that the following domains are core APN competencies: evidence-based practice; research; clinical judgment;

autonomy of practice; consultancy; clinical and professional leadership; education and teaching; collaboration and interprofessional relations; ethical and legal practices; quality and safety management; care management; health promotion; communication; cultural competence; advocacy and change management[16] These domains are similar to those established in the analysis presented here.

On the other hand, the study by Sastre-Fullana[16] established a set of APN competencies through a consensus among experts, and it showed that evidence-based practice and clinical and professional leadership are crucial elements for nursing practice. It also considered research domain to be essential for APN, with respect to other nursing levels.

In this study, ethical domain, followed by promotion, prevention and evidence-based nursing obtained the highest results in terms of relevance. Evidence-based practice, interprofessional practice and care management were also considered fundamental in other studies, with findings similar to those of the present study.[16]

As for the care management domain, prescribing drugs was not considered indispensable or very relevant by most of the participants, contrary to the results presented in a report[18] which indicated the growing role of APN in the prescription of drugs. In countries such as Australia, United States, Ireland and the United Kingdom, nurses are authorized to prescribe drugs, and in others, such as Finland, this practice is being implemented.

The United States was the first country to include prescribing drugs as a nursing competency and, afterwards, Australia, Canada and England followed suit. This practice requires changes to laws in countries, which may create a difficulty for advanced nursing roles.

Results related to not considering prescription of drugs as indispensable or very relevant may suggest that the understanding of this competency by the participants is linked to the current situation in certain countries that only permits this practice by physicians. It may also be related to lack of clarity regarding the role of APN.

Therefore, to be able to prescribe drugs, it is necessary that countries and regulatory agencies establish programs and specific regulations.

Another finding of this study involves the autonomy of APN; only four participants said they did not agree with this competency. The study by Sastre-Fullana[16] also addresses the importance of competencies that stress professional autonomy, ability to influence and guide other professionals, consulting when necessary, transitional care, advocacy and guidance for users in their care process and, particularly, that autonomy must be regulated and framed in ANP.

The leadership domain received a degree of relevance as an indispensable or very relevant competency exceeding 80%, which coincides with other studies[16,17] that emphasize autonomy, leadership in the work team, coordination and referral of patients within health services and the role played by interprofessional teams.

A study by Nieminen et al.[19] on clinical nursing specialists defined the core competencies as: direct care, consulting, leadership, collaboration, coaching, ethics, decision making and research. The ethical domain achieved a high score as indispensable or very relevant, similar to the findings of other studies.[15]

In the case of the present study, the participants did not consider the use of technological systems for capturing data and assessments to be a relevant APN competency, unlike other studies that showed the importance and relevance of this aspect among the core competencies.[20,21]

Informatics and knowledge of technological systems should be core competencies in professional nursing practices, since the development of these competencies promotes, improves and facilitates collaboration and integration with other professions, besides other benefits.[20, 21]

Finally, the implementation of APN requires a definition of the core competencies for the training of these nurses, in addition to knowledge on the experiences of other countries. Considering that most of the competencies examined in this study were considered relevant by the participants, it is possible to use them once a consensus has been reached and they are contextualized in each country.

The scientific literature illustrates the benefits of implementing APN. However, there are barriers to expanding the roles of nurses, such as lack of protection for the academic degrees of advanced practice nurses, lack of clarity of the role, financial barriers to payment and reimbursement, variations in training, unnecessarily restrictive regulations and resistance by stakeholders. All of these barriers represent substantial impediments to the implementation of new functions in clinical environments.[22]

Despite this situation, the training of nurses in order to expand their role in APN is a crucial aspect which should be given the same priority as regulatory components and policies.

Most of the participants expressed their opinions regarding the relevance of the competencies to be considered core competencies in advanced practice nursing in PHC, taking into account the current reality of the role of nurses, which may have had an impact on the results.

It is possible that lack of knowledge about the profession and lack of clarity regarding the role influenced the answers and that the definition presented in the instrument was not sufficiently clear for many participants.

Another limitation is the heterogeneity of the sample of participants in terms of size and distribution by country, since the participation was very uneven. However, this study did present important comments and opinions for training advanced practice nurses in the region.

This pioneer study on the topic contributes to the recent discussion on training and the core competencies for primary health care nurses in Latin America. However, these competencies must be framed within a specific context and regulated by laws in each country where the expanded role of nurses in primary health care will be implemented.

Conclusion

This study presented a set of core competencies for advanced practice nurses and contributes to the discussion on their training within the context of PHC. A representative group of nurses from 31 countries from the Americas, holding various po-

sitions, examined the competencies presented and considered 50 of them to be core competencies. It is possible that lack of clarity regarding the role of APN contributed to an analysis based on current scope of work and regulations, and not on a vision to expand the role. An analysis of these competencies according to the specificities of each country, could yield other findings.

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Collaborations

Cassiani SHB, Aguirre-Boza F, Hoyos MC, Barreto MFC, Morán L, Cerón MC and Silva FA contributed to the design, writing of the first draft, interpretation and writing of the subsequent draft, data analysis and approval of the final version.

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