

Construction of evaluation indicators of the learning process for a nursing course**Construção de indicadores de avaliação de processo de aprendizagem para um curso de enfermagem**

Luzmarina Aparecida Doretto Braccialli¹, Anete Maria Francisco², Magali Aparecida Alves de Moraes³,
Maria Helena Ribeiro de Carvalho⁴, Marilda Marques Luciano Marvulo⁵, Odilon Marques de Almeida Filho⁶

¹ Nurse, Doctor of Nursing. Professor, Marília School of Medicine (FAMEMA), Marília, SP, Brazil. E-mail: luzbra@terra.com.br.

² Biologist, Doctor of Ecology and Natural Resources. Professor, FAMEMA, Marília, SP, Brazil. E-mail: anetempf@gmail.com.

³ Psychologist, Doctor of Education. Professor, FAMEMA, Marília, SP, Brazil. E-mail: dmagalimoraes@hotmail.com.

⁴ Nurse, Master of Fundamental Nursing. Professor, FAMEMA, Marília, SP, Brazil. E-mail: marihel2002@uol.com.br.

⁵ Nurse, Master of Fundamental Nursing. Professor, FAMEMA, Marília, SP, Brazil. E-mail: mamaluma@famema.br.

⁶ Biochemical Pharmacist, Doctor of Biological Sciences. Professor, FAMEMA. Marília, SP, Brazil. E-mail: odilonbio@yahoo.com.br.

ABSTRACT

The objective of this study was to build process assessment indicators for a nursing undergraduate course. The indicators were validated after three stages of a consensus conference, developed by experts based on an initial matrix with 209 indicators, in four areas of competence of the course. The analysis, performed with the mean and standard deviation of each indicator, led to the final matrix, comprising 87 indicators. The experts agreed that all indicators should be in the four stages of the nursing course program, considering the degree of autonomy of the undergraduate in each stage, and the fact that it is an integrated course, oriented by competences. The indicators may support local managers in the process assessment of the nursing course, as well as help other course managers in the health area use a program oriented by competences and active learning and teaching methodologies.

Descriptors: Education, Nursing; Consensus Development Conference; Competency-Based Education.

RESUMO

O objetivo foi construir indicadores de avaliação de processo para um curso de graduação de enfermagem. Conferência de Consenso, realizada por especialistas a partir de matriz inicial, contendo 209 indicadores em quatro áreas de competência do curso que, após três etapas de conferência, validaram os indicadores. A análise realizada com a média e o desvio padrão de cada indicador levou à matriz final que contemplou 87 indicadores. Os especialistas concordaram que todos os indicadores deveriam constar nas quatro séries do Curso de Enfermagem, considerando-se o grau de autonomia do estudante em cada série, por ser um currículo integrado e orientado por competência. Os indicadores poderão subsidiar gestores locais na avaliação de processo do Curso de Enfermagem, mas também são indicados a outros gestores de cursos da área da saúde que utilizem um currículo por competência e metodologias ativas de ensino e aprendizagem.

Descritores: Educação em Enfermagem; Conferência de Consenso; Educação Baseada em Competências.

INTRODUCTION

In its nearly 50 years of existence, the Marília Medical School – Famema has been working in the permanent curricular transformation of the medical and nursing courses, aiming at basic clinical integration and the use of active teaching and learning methods. The pioneering spirit of the faculty has contributed to the national and international scientific production, as well as with curricular changes in other educational institutions of the health area⁽¹⁻⁴⁾.

So, although Famema has monitored the process of curricular changes in line with the National Curriculum Guidelines (NCG)⁽⁵⁾ that guide professionals who will graduate and develop in the evaluation process in the different teaching-learning scenarios, it does not have indicators to assess the training process of students in a global way.

In face of the need to think about these indicators and given the teaching staff experience with use of active methodologies, this research was important for its consolidation in a participatory manner, providing contribution of professionals in the construction of indicators. The superiority of judgment of experienced individuals in relation to individuals or even a small group is noteworthy⁽⁶⁾. In the literature, there are several studies on the development of product evaluation, however, is identified a shortage of studies addressing the evaluation of process in relation to changes in the training of health professionals⁽⁷⁻⁸⁾.

Since 2003, the Famema Nursing Course is organized by integrated curriculum and guided by dialogic competence, using active methodologies in its Educational Units. According to the pedagogical project of the course, learning is 'action-oriented and evaluation of competence is based on observable processes and results called performances that, in turn, are composed of attributes (skills and abilities) developed throughout the course years'⁽¹⁾.

The features are affective, cognitive and psychomotor, i.e., knowledge, skills, information,

interpersonal relationships, values and beliefs, attitudes, bioethical principles, dexterity and abilities to effectively solve the problems of professional practice⁽⁹⁾.

In this sense, the evaluation of students' performance cannot be considered a checklist, but rather an action involving the coordination of tasks and attributes broadly. Evaluation enables the action, reflection and a new action favoring the learning development in a professional practice context⁽¹⁰⁾.

Thus, the development of indicators for the nursing course involves considering the curriculum throughout the four years, identifying the end of each stage (year) according to its complexity. This process and the results from the analysis of indicators will assist the improvement of the formation process of nurses as articulately as possible, and present to the scientific community a chance to conduct this process in other Higher Education Institutions (HEIs).

According to the literature, the use of evaluation indicators can help administrators by enabling them to operate on 'key- dimensions of systems and processes, monitoring situations that shall be changed, encouraged or potentialized since the beginning of an intervention until reaching the objective intended and foreseen as a result'⁽⁶⁾, thus enabling the implementation of any necessary curricular changes.

One of the concepts of indicator is that it is 'a significant that witnesses the existence of a certain phenomenon. It is a sign that makes us recognize the presence of an expected effect'⁽¹¹⁾. Indicators can 'serve as a guide for students knowing what is expected of them in terms of learning processes and outcomes, and they express a probability, a hypothesis of reaching the criteria, never a certainty'⁽¹²⁾. Another author adds that its role is just being a signal: indicators are instruments and do not operate by themselves, but indicate what they are supposed to indicate⁽⁶⁾.

Indicators can also refer to tangible and intangible aspects of reality. Tangibles are the easily observable elements such as identification data, physical

examination and others. Intangibles are the attributes that can only be seized indirectly through its manifestation forms such as values, self-esteem, attitudes and others⁽⁶⁾.

This study was developed from the arguments elaborated in the text, starting from the following research question: What are the indicators of a nursing course by year.

Hence, the study aims to build indicators of process evaluation for a nursing graduation course.

METHOD

This is a descriptive study of qualitative nature⁽¹³⁾ carried out between December/2010 and December/2011 using the consensus conference⁽¹⁴⁾, which consists of a mixed technique that combines a broad and open discussion between experts in order to seek consensus and at the same time maintain anonymity.

The study was conducted by researchers of the evaluation group of Famema. Such group was formed by seven teachers from different professional areas, namely: doctor, educational and healthcare nurse, pharmacist, biologist and psychologist. They drew up an initial matrix with 209 indicators distributed among the four areas of competence (care of individual needs in all phases of the life cycle; care of collective health needs; organization and management of the work process in health; and scientific research) considering the specificity for each stage (year). The indicators were built using as references the Political Project of the Nursing Course and the pedagogical proposal of educational units of each year of the nursing course during 2010.

Four teachers from Famema and two external teachers from other higher education institutions were invited to attend the consensus conference and compose the group of experts. According to the chosen technique, conference participants shall have adequate expertise for analysis of the proposal under discussion. Thus, the inclusion criteria considered for this study group were

professional nurses with expertise in curriculum of courses with active methodologies, and professionals with experience in monitoring the practice of students in various scenarios of teaching and learning, such as clinical nurses, nurse managers, nurse preceptors and teachers. The experts were identified by their knowledge, invited and confirmed their participation in the study after receiving the invitation letter.

Conference steps

The first step was to assign scores to the originally drafted matrix, which was sent by mail and e-mail to the experts with 60 days to return the material.

The experts attributed a score of zero to 10 for each indicator of the initial matrix, according to the importance degree of every indicator in the curriculum. They could suggest the inclusion of new indicators or their modification. A score of 10 meant the utmost importance of the indicator, and the score of zero meant the indicator should be deleted. Such guidance was sent to the experts.

All matrices were returned completed to the group of researchers that consolidated the answers through arithmetic mean and standard deviation, meaning the degree of importance and the degree of consensus for each indicator, respectively. Thus, the higher the mean, the greater the importance of the indicator, and the lower the standard deviation, the greater the degree of consensus, irrespective of the importance attributed to the indicator. At this step, all indicators were maintained despite the assigned values, and it was named as consolidated matrix.

The second step of the conference was held with the presence of experts in a discussion group coordinated by one of the researchers. All who completed the matrix were present. The coordinator presented to the group the consolidated indicator by area of expertise, as well as the mean and standard deviation, preserving the anonymity of participants. The experts debated the indicators for eight hours to clarify each of them, without necessarily reaching a consensus. The other researchers followed the

discussion, participating only by taking notes on the experts' suggestions for the new matrix. In addition, the conference was filmed after the authorization of participants. Throughout the discussion, the experts had divergent and convergent views, all of which were acknowledged to build a new matrix.

In the third step of the conference, the new matrix was sent to the group of experts. After the face-to-face meeting, the matrix contained 91 indicators for a new score, with the period of a month for its return.

Upon receipt of the new matrix, the researchers did a new statistical analysis with mean and standard deviation. Based on the Consensus Conference⁽¹⁴⁾, the following cutoff points were established:

- a) Any indicator with mean value higher than or equal to seven was considered important. Any value lower than that was considered as little important and therefore, should not be part of the curriculum indicators matrix.
- b) Any indicator with a standard deviation value lower than three was considered consensual.
- c) The indicators with mean value greater than or equal to seven and standard deviation of three or more were excluded because they were not consensual.

Thus, all indicators were considered important, excluding four that were not consensual and therefore were left out of the indicators matrix.

The study project was approved by the Research Ethics Committee of Famema under Protocol 774/10. The subjects who participated in the study signed an Informed Consent, which highlighted that the research did not have risks and benefits and they were free to cancel their participation at any time they wished.

RESULTS

After the conference, there was consensus that the initial matrix should be re-elaborated, excluding 122 indicators of the 209 initially proposed, thus resulting in

87 indicators to evaluate the four areas of competence: care of individual needs in all phases of the life cycle; care of collective health needs; organization and management of the work process in health; and scientific research.

The initial matrix had 109 indicators in the competence area of Individual Health Needs, of which 68 were eliminated by experts after the consensus conference, leaving 41 (Table 1). In discussions among experts, it was consensus that the physical examination did not require detailing in the indicators matrix because it was internationally validated.

The initial matrix had 57 indicators in the competence area of Collective Health Needs, of which 48 were eliminated by the experts after the consensus conference, leaving nine (Table 2). Some indicators of that area were moved to other areas of competence, and others were eliminated and/or grouped following the same rationale of the previous area.

Among the 24 indicators proposed for the competence area of Organization and Management of the Work Process in Health, six were eliminated by the experts (Table 3).

Some indicators of these three areas were eliminated because of their excessive detailing, which would result in a possible detachment of the proposed performance. Others were grouped together for having the same context.

In the competence area of Scientific Research, the initial matrix contained 19 indicators and all were maintained (Table 4).

The experts reached a consensus that all indicators should be included in the four years of the Nursing Course, considering the degree of student autonomy in each year, in a curriculum integrated for competence.

Table 1: Competence area indicators: the individual care needs. Marília, SP, Brazil, 2011.

Health surveillance area: care of individual needs in all phases of the life cycle				
Performance: IDENTIFIES HEALTH NEEDS				
Action: Clinical History	Action: General Clinical Examination	Action: Specific Physical Examination	Action: Clinical Reasoning	Action: Diagnostic Research
In service and/or report:				
1. Makes a clear self-presentation in order to clarify one's own identification, obtains the consent of the person or responsible person and ensures confidentiality;	13. Gets consent to proceed with the physical examination and provides guidance on the procedures to be carried out;	16. Demonstrates appropriate skills and techniques of inspection, palpation, percussion and auscultation according to each body system;	18. Integrates and organizes data obtained from data collection, in order to formulate people's problems, considering their context and their work and living conditions;	24. Justifies his/her decisions with ethical principles, clinical and epidemiological reasoning;
2. Adopts welcoming attitude and ethical behavior that favor the bond, from beginning to end of contact. Has perception and sensitivity to adopt the best strategy for user embracement at the time of care in order to observe the creation of bonding;	14. Adopts ergonomic and biosafety measures, considering the current Regulatory Norms (NR-32);	17. Offers alternatives in the difficulty of exam completion.	19. Formulates people's health problems from the health needs;	25. Considers the cost/effectiveness, access and financing of resources;
3. Applies principles of biosafety according to the ANVISA protocol, respecting the current regulatory standards;	15. Performs general clinical examination considering the different phases of the life cycle and according to ethical principles.		20. Prepares the explanatory network of problem from the health needs;	26. Requires and interprets complementary resources to confirm or rule out the hypotheses and intervenes when necessary.
4. Identifies situations in which the person is unable to assist the student. Respects and defines strategy;			21. Identifies the available resources for the problems in face of their explanation;	
5. Identifies situations that prevent the realization of the medical history and performs relevant actions according to the degree of autonomy of the student;			22. Identifies the individual risks for proposing the action plan;	
6. Conducts the interview with adequate pace to the time available in each scenario;			23. Informs his/her hypotheses and the necessary investigation for the problem in an ethical, empathetic and understandable way for the person/companion.	
7. Identifies the person, the informant and the family members: full name, age, gender, ethnicity, place of birth, current and remote origin, profession, activity in which one is currently engaged or used to exercise, religion, marital status and educational level, and family context in which the person is inserted;				
8. Observes verbal and nonverbal communication considering the autonomy of the person;				
9. Identifies the need to use the tools of soft and soft-hard technologies;				
10. Data collection considers the health needs (good living conditions, access to technology, bonding, affection and autonomy);				

Health surveillance area: care of individual needs in all phases of the life cycle				
Performance: IDENTIFIES HEALTH NEEDS				
Action: Clinical History	Action: General Clinical Examination	Action: Specific Physical Examination	Action: Clinical Reasoning	Action: Diagnostic Research
11. Identifies and correlates sociocultural aspects by contextualizing scenarios;				
12. Records the information clearly and legibly, in a systematic and articulated way in the relevant documents.				
Performance: ELABORATES, EXECUTES AND EVALUATES THE CARE PLAN				
Action: Care plan				
27. Participates in the elaboration of care plans with the team/individual/family, covering health actions (promotion, prevention, recovery and rehabilitation) according to the explanation of the problem identified, and based on ethical principles, clinical and epidemiological reasoning;				
28. Elaborates care plans with the team/individual/family, showing consistency between the medical history and clinical examination performed, guided by ethical principles, clinical and epidemiological reasoning;				
29. Elaborates care plans with the team/individual/family, covering actions of promotion, prevention, recovery and rehabilitation in health;				
30. Executes care plans with the team/individual/family, showing consistency between the medical history and clinical examination performed, guided by ethical principles, clinical and epidemiological reasoning;				
31. Executes care plans with the team/individual/family, covering actions of promotion, prevention, recovery and rehabilitation in health;				
32. Identifies the resources available in the various levels of the health system for proper care (access to medicines, equipment, transportation, etc);				
33. Considers the social determinants of the health and disease process associated with evolution of the problem;				
34. Makes referrals considering the access and degree of solvability of the different health care services, when making referrals/counter-referrals of people;				
35. Refers users at discharge from the health service of origin, completes the counter-referral form when necessary, considering the relationship with the health unit;				
36. Evaluates problems procedurally and establishes the necessary measures for recovery/rehabilitation of health;				
37. Executes appropriate technical/therapeutic procedures in a shared way with the person/family/responsible person;				
38. Observes if there was adherence to the actions proposed in the guidance and identifies reasons for non-adherence;				
39. Reformulates the care plan (referrals and guidance) if necessary;				
40. Records information in medical records in a clear, objective and readable way, focused on the person's problem, under professional supervision;				
41. Establishes goals in the care plan.				

Table 2: Competence area indicators: the collective health needs. Marília, SP, Brazil, 2011.

Health surveillance area: care of collective health needs
Performance: ELABORATES, EXECUTES AND EVALUATES THE CARE PLAN
Action: Epidemiological Data Collection
1. Identifies sources of primary and secondary information and participates in the data analysis together with the health team, in the light of descriptive and social epidemiology;
2. Identifies and uses economic, social and health indicators for the knowledge and planning of actions (health diagnosis) in different scenarios;
3. Identifies the social equipment for planning interventions in different scenarios;
4. Performs health diagnosis of the population in the area and plans the intervention taking into consideration the service conditions and the socioeconomic and cultural reality of the coverage area, correlating them with the problems of people and the families;
5. Elaborates a health diagnosis report according to the Brazilian National Standards Organization (ABNT) norms;
6. Acknowledges factors that limit or enable professional work in the transformation of health problems.
Performance: FORMULATES AND PROCESSES THE PROBLEM
Action: Situational Diagnosis
1. Performs situational epidemiological diagnosis from the perspective of collective needs;
2. Prioritizes the issues raised.
Performance: ELABORATES, EXECUTES AND EVALUATES THE INTERVENTION PLAN
Action: Intervention Plan
3. Executes and evaluates the intervention plan, feeds it back.

Table 3: Competence area indicators: organization and management of the work process in health. Marília, SP, Brazil, 2011.

Health surveillance area: organization and management of the work process in health		
Performance: ORGANIZES AND E ELABORATES HEALTH WORK WITH THE TEAM		
Action: Identifies and Analyzes Many Situations		
1. Establishes effective communication: students must understand the others and make themselves understood;		
2. Respects principles and values of the other team members;		
3. Performs his/her tasks with responsibility in the team and fulfills group agreements;		
4. Evaluates the performance of the individual, the team and of health professionals;		
5. Gives and receives criticism respectfully;		
6. Characterizes the health care levels, establishing relationships of flow and complexity among primary, secondary and tertiary care;		
7. Characterizes the organization of the Health Unit/Service by placing it in the local/regional health system;		
8. Characterizes the organization and management of the work in health guided by the Unified Health System principles (comprehensiveness, universality, equity);		
9. Comprises the organization of professionals, financial resources, materials/equipment from a determinant of the work process in health;		
10. Participates in the co-management of the work process in health: discusses the problems and intervention plans, seeks solutions together, establishes cooperation with the team, takes responsibility for the monitoring of families, considers the autonomy and freedom of individuals in teamwork decision-making, identifies and works the conflicts present in the team;		
11. Participates in the elaboration and execution of the work plan with the team, based on health surveillance actions with the team: health promotion, disease prevention, recovery and rehabilitation;		
12. Produces goods/services necessary for the health of population;		
13. Seeks strategies for implementing the plan.		
Performance: EVALUATES THE HEALTH WORK		
Action: Systematizes the Health Information		
14. Participates in the evaluation of the intervention plan of individuals, families, of the collective actions, and the health team;		
15. Critically evaluates the structure (organization, building, standards and protocols, system of information and resources), in various scenarios;		
16. Evaluates the process and results of the actions developed in different scenarios;		
17. Uses specific quality indicators of each health care service for the decision-making in the many scenarios;		
18. Proposes improvement actions in the various scenarios.		

Table 4: Competence area indicators: scientific research. Marília, SP, Brazil, 2011.

Health surveillance area: scientific research		
Performance: IDENTIFIES AND EXECUTES THE RESEARCH		
Action: Chooses the Area and Defines the Subject	Action: Formulates the Research Project: Introduction – Objective – Method	Action: Executes the Project: Collects and Analyzes the Data; Critically Interprets the Results; Writes and Publishes the Research
1. Understands the research as a way to provide the analysis of a topic from new focus or approach;	4. Formulates the research question;	13. Identifies systematically the collected material;
2. Considers the theoretical and practical relevance and the availability of publications to choose the theme;	5. Defines its delimitations;	14. Deploys the chosen techniques for data collection;
3. Seeks answers to the questions proposed with systematization and scientific criteria	6. Defines relevance;	15. Interprets the data collected;
	7. Elaborates justification;	16. Discusses the results, comparing them with the bibliographical references;
	8. Defines objectives;	17. Prepares the final draft, according to the methodological design of the research project;
	9. Discusses the search strategies;	18. Uses the technical standards of bibliographical references, according to the Brazilian Association of Technical Standards (ABNT)/Vancouver;
	10. Characterizes the bibliographical collection to be consulted;	19. Presents the study results in scientific events/publications.
	11. Critically analyzes the bibliographical sources;	
	12. Explains the methodological procedures.	

DISCUSSION

The indicators agreed upon by the nurses and professionals specialized in curricula with active

methodologies pointed fundamental knowledge for nursing education, considering the National Curriculum Guidelines⁽¹⁾. Such knowledge refers to ethics/bioethics,

user embracement, autonomy, bonding, communication, biosafety measures, group process, professional-patient relationship, public health policies, health and disease process, among others.

In addition, for individual care needs there should be the elaboration of medical history, a general and specific physical exam, clinical reasoning development, diagnostic research, a care plan and evaluation.

Regarding care of collective health needs, the indicators refer to the collection of epidemiological data, situational diagnosis and an intervention plan.

These approaches emphasize that the indicators listed by the experts subsidize the monitoring of the teaching and learning process of students in the development of curriculum for care. This process should consider the subjects in their uniqueness and as a group, with values, desires, expectations, beliefs, autonomy, considering the clinic and epidemiology from an expanded healthcare perspective⁽¹⁵⁻¹⁶⁾.

In the health surveillance area: organization and management of the work process in health, the experts agreed upon indicators regarding the organization, elaboration and evaluation of work in health.

By contrast, in the nursing graduation, most resumes bring incipient training in this area, showing conservative, fragmented models and use of hard technologies, evidencing that the care focus remains on the disease. Thus, it reproduces the practices and organization of work when it should be structured from the problematization of professional practice and the health needs of people and the population⁽¹⁷⁻¹⁸⁾.

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Finally, in the area of scientific research, the experts reinforce all stages of a scientific research. This enables the 'learning to learn' advocated by the NCG⁽¹⁾ and the curricula with active methods of teaching and learning, and the construction of knowledge based on the world of work.

The indicators agreed upon by the experts support the Famema educational proposal, which begins in the working world, in the light of the NCG⁽⁵⁾ and the Unified Health System, bearing in mind the knowledge necessary for nurses, faced with the complexity of education, management and citizenship⁽⁴⁾.

FINAL CONSIDERATIONS

This study contributed to the development of indicators for a nursing graduation course subsidizing the evaluation in the teaching-learning process of the following areas: individual, collective, management and scientific research.

From the results of this study, it is possible to develop new researches with indicators specifying the degree of autonomy and complexity in each course year in an integrated curriculum oriented by dialogic competence. These can be elaborated from the monitoring of the proposed evaluation process.

The indicators may subsidize local managers with the evaluation process of the Nursing course, as well as managers of other programs in the health area who use an integrated curriculum by dialogic competence, and active methodologies of teaching and learning.

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