

Medical students' level of competency acquisition: Assessment from teaching perspective

Germán Guaresti*

National University of Río Negro, Patagonian Interdisciplinary Center for Health Research -CePIleS, Argentina.

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Abstract

The medical program at the Universidad Nacional Río Negro has an integrated, competency-based curriculum. The objective of this study was to evaluate the level of satisfaction with medical education competencies over the first four years of the program. It was determined that more than 90% of the planned competency satisfaction level was achieved. Continuous assessment is a central practice for identifying areas for improvement and guiding management.

Keywords: Medical education; Competencies; Assessment; Faculty; Curricular integration

1. Introduction

The medical program at the Universidad Nacional de Río Negro – Sede Andina (UNRN-SA) began in 2022. The curriculum for this program proposes the integration of content corresponding to three disciplinary areas: Individual Body, Body in relation to the health-illness-care-attention process (Body and PSEAC), and Social Body, which are integrated into all subjects [1,2].

The initial cycle of the degree lasts 3 years, with 12 bimonthly subjects that are Introduction to the study of medicine, Health promotion, Links, Movement; Human being and environment; Blood and defense, Respiration, Cardiovascular health, Nutrition and endocrinology; Sexual and reproductive health, Disability. The Professional Development cycle lasts two years, with quarterly or semiannual subjects: Urgencies and emergencies, Surgical approaches, Practical preventive and rural outpatient medicine; Hospitalization, Mental health and legal medicine, Management of chronic patients. Meanwhile, the Mandatory Final Practice presents 4 semester subjects [1].

On the other hand, like most medical degrees, the UNRN-SA degree is competency-based [3]. The 62 competencies of the medical degree (Annex 1) are established for each subject and are divided into 4 categories: Clinical Practice Competencies (items 1 to 11w), Scientific Thinking and Research Competencies (items 12 to 17), Professionalism Competencies (items 18 to 33), and Competencies related to Population Health and Health Systems (items 34 to 4).

Likewise, different levels of satisfaction are established for each competency, namely: 1. The theoretical foundations linked to the competency are taught; 2. The method of implementation is theoretically explained; 3. The student sees the implementation; 4. The student performs the activities-tasks at least once ; 5. The student performs the activities-tasks until the competency is acquired; 6. Not applicable.

The level of satisfaction for each competency was established for each subject by the program's coordinating team in the presentation for quality accreditation carried out by the National Commission for the Evaluation and Accreditation of Universities for Strategic Professions (CONEAU) [4], prior to the start of the first cohort of students. Therefore, it is

* Corresponding author: Germán Guaresti

essential to be able to evaluate the development of the academic program in terms of overall student satisfaction levels for the competencies [5].

The general objective of this research was to analyze the overall level of competency acquisition among UNRN-SA medical students and to substantiate their relevance and training needs, if applicable, based on teaching evaluation.

2. Methodology

This is an exploratory descriptive study that analyzes the assessment of the UNRN-SA medical school faculty in relation to the level of skill acquisition among students in general (population analysis). Individual skill acquisition is not analyzed in this study, as this is done through individual assessments at the end of each course and at the end of the initial cycle of the program.

Four faculty meetings were held during June 2025, lasting two hours each, in focus group style, to analyze the level of competency acquisition in the subjects of each academic year. Faculty members from each academic year were convened seven days in advance of each meeting. Participation was voluntary and informed. The dynamics included a theoretical introduction to the competency-based structure of the UNRN-SA medical program curriculum, conducted by the training program director. Satisfaction levels for each year's subjects were then analyzed, with the highest score as the objective. The groups were then divided into small working groups of four to six faculty members from different areas to specifically address the level of achievement for each competency. This process was then shared with the other groups and discussed until a consensus was reached. The working materials and notes from the discussions were analyzed and systematized for this study.

3. Results

A total of 47 teachers participated, with their disciplinary area, academic year and teaching category detailed in Table 1. The total number of teachers in the program is 70, with participation being 67.1%.

Table 1 Teacher participation according to academic year and disciplinary area of belonging

Year/Area	Individual Area	PSEAC Area	Social Area	Professor	Teaching assistant	Total
First	3	3	4	3	7	10
Second	3	6	4	7	6	13
Third	2	5	3	5	5	10
Fourth	5	6	3	5	9	14
Total	13	20	14	20	27	47

Source: own elaboration

The results of the work regarding competencies, considering the four academic years analyzed, established that students reached the stipulated level in 66.6% of the competencies, while they exceeded the satisfaction level in 25.8% of them. Meanwhile, they were below the satisfaction level of 7.6%. Table 2 shows the levels of satisfaction with the achievement of competencies for each year, as well as the competencies with the lowest level of satisfaction.

Table 2 Degree of satisfaction with student competencies in number and percentage

Degree of satisfaction	Chord	Elderly	Minor	Deficient skills
First Year	44 (71%)	14 (22.5%)	4 (6.5%)	12-14-35-38
Second Year	43 (69.4%)	14 (22.6%)	5 (8%)	10-15-17-25-39
Third Year	48 (77.4%)	10 (16.1%)	4 (6.5%)	4-19-24-39
Fourth Year	30 (48.4%)	26 (41.9%)	6 (9.7%)	3-11q-11s-11u-11w-26
Totals	66.6%	25.8%	7.6%	

Source: own elaboration

The analysis by academic year is detailed below, with an observation of the competencies detected with a deficit in the level of satisfaction, highlighting the conclusions and proposals:

Table 3 details the competencies that, after the teaching analysis, do not reach the level of satisfaction proposed in the presentation of the degree, by academic year.

Table 3 Description of competencies by academic year in which the proposed level of satisfaction was not reached

Year	Competencies (number and description)
First Year	12. Use critical thinking, clinical reasoning, evidence-based medicine, and scientific research methodology in managing information and addressing medical and healthcare problems. 14. Critically analyze scientific literature. 35. Identify health problems in each community and participate in the development, implementation, and evaluation of health promotion programs and prevention of prevalent, emerging, and re-emerging pathologies. 38. Uses the basic principles of health services administration and program management and knowledge of the sector's organization in individual and/or community practices.
Second Year	10. Respect and enforce, under all circumstances, biosecurity and asepsis standards. 15. Plan and indicate complementary studies considering the sensitivity, specificity, positive predictive value and negative predictive value of the tests. 17. Analyze the cost/benefit of different diagnostic and therapeutic practices. 25. Respect bioethical standards when proposing the inclusion of patients in clinical studies. 39. Comply with current regulations and activities specified in ongoing health programs.
Third Year	4. Propose differential diagnoses. 19. Participate in the presentation and discussion of clinical cases among colleagues. 24. Respect bioethical standards when indicating studies and/or treatments, referring to the corresponding Committee in dilemma situations. 39. Comply with current regulations and activities specified in ongoing health programs.
Fourth Year	3. Formulate initial diagnostic hypotheses, considering: a) the data provided in the history; b) the findings of the physical examination; c) the prevalence of the diseases. 11q. Abdominal paracentesis 11s. Drainage of superficial suppurative collections (subcutaneous cellular) 11u. Immobilization and transfer of patients 11w. Care of eutocic delivery 26. Report notifiable diseases

Source: own elaboration

For competencies that did not reach the satisfaction level among first-year students, a satisfaction level of 4 had been established, meaning "the student completes the activities/tasks at least once." However, for competencies 12 and 14, the satisfaction level is currently at level 2/3, and it is expected that they will reach level 4 by the end of the year, establishing longitudinal workshops on bibliographic research and analysis of scientific documents. On the other hand, for competencies 35 and 38, it is agreed that the proposed level 4 was overestimated for first-year medical students, so the current level achieved (corresponding to level 2) is considered appropriate.

Meanwhile, for the second year, a satisfaction level of 5 was established for competency 10; however, not all students achieve this level under all circumstances, which is why it is established that they currently reach level 4, and work will be done through a clinical simulation strategy during the second semester to reach the maximum level, as established. Likewise, a satisfaction level of 3 was established for competencies 15 and 17; however, due to the content and practical activities carried out during the second year of the degree, it is established that the satisfaction level should be 2, as the students currently achieve. As for competency 25, the same was established for level 3 of satisfaction, however, in the practice of the establishments where students attend this task is not carried out, so the level 2 they have achieved up to

this point is considered adequate. Regarding competency 39, established for a satisfaction level of 5, students have so far reached level 4, which is considered adequate for this training stage.

In the third-year case, competency 4 was established with a satisfaction level of 4; students achieved level 3 at the time of the analysis, and work will continue throughout the remainder of the year to achieve the established level, especially in the Doctor-Patient Relationship tutoring sessions. Competencies 19 and 24 were established for a satisfaction level of 3; however, in practice, this task has not been performed—and it is not yet appropriate in the Initial Cycle of the program—so the level 2 they have achieved to date is considered adequate. Finally, for competency 39, a satisfaction level of 5 was established; however, not all students achieve this level in all the territories where they carry out their Field Tutoring activities. Therefore, it is established that they currently achieve level 4, and work will continue during the second semester to reach the maximum level, as established.

Regarding the analysis corresponding to the 4th year of the program, competency 3, established for a satisfaction level of 5, was not achieved by all students, so work will continue throughout the year to acquire it, especially in supervised practice. Competencies 11q, 11s, and 11u reached a satisfaction level of 3, when the established level was 4. Due to the difficulty of implementing them in clinical practice settings, work will be done in clinical simulation spaces to achieve the established level. Meanwhile, competency 11w, established at level 4, does not correspond to the 4th year content (it is covered in the 5th year), so the level achieved so far is considered adequate. Competency 26, established for a satisfaction level of 4, was not achieved by all students, so work will continue throughout the rest of the year to acquire it, especially in supervised practice in the subjects Urgencies and Emergencies, and Ambulatory Medicine, Preventive and Rural Practice.

4. Discussion

Faculty participation in the competency satisfaction assessment activity was very good, with two-thirds of the teaching group participating, and with balanced representation from all disciplinary areas of the program. This is significant, since the role of teachers in the management and evaluation of the training program is essential, and their participation can be an indicator of motivation and job satisfaction [6].

On the other hand, the evaluation of academic programs is essential, since medical education is dynamic and constant evaluation is required for the design of innovative teaching methodologies so that students acquire skills and competencies [7]. Thus, curriculum evaluation is important to ensure that the program is working as planned, identify areas for improvement, improve decision-making and ensure quality [8].

Regarding the level of satisfaction with the competencies, it was revealed that this level was reached and/or exceeded in more than 90% of the subjects in all the academic years analyzed, which means that the development of the program was in line with what was planned in terms of the acquisition of competencies at a global level of the students. This is important since the development of competencies is central to university teaching [9].

Of the total competencies with satisfaction levels below the established level, after joint analysis by the teaching staff, it was established that only 10 of them, representing 4% of the total, require adjustments during the second semester to achieve the established level. These correspond to two first-year competencies, one second-year competency, two third-year competencies, and five fourth-year competencies. This need to strengthen specific competencies within the curriculum to overcome training deficiencies is essential for achieving the relevant acquisition levels [10].

5. Conclusions

The evaluation of academic programs is essential for monitoring their development, identifying areas for improvement, and guiding management. This study assessed the level of satisfaction with the set of competencies in medical education in the UNRN-SA medical program. The level was very high, with over 90% satisfaction rates in line with the program.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Consent was obtained from the participants.

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Annex 1

List of Medical Career Competencies

Note: For the degree of satisfaction:

- The theoretical foundations linked to the competition are taught
- The way in which it is carried out is explained theoretically
- The student sees the realization
- The student performs the activities tasks at least once
- The student performs the activities tasks until acquiring competence
- Not applicable

Subject	Competencies	Degree of Satisfaction
	CLINICAL PRACTICE	
	1. Prepare the medical history	
	2. Performs complete physical and mental examinations on inpatients and/or outpatients.	
	3. Formulate initial diagnostic hypotheses, considering: a) the data provided in history; b) the findings of the physical examination; c) the prevalence of the diseases.	
	4. Propose differential diagnoses.	
	5. Select, indicate and interpret diagnostic methods.	
	6. Indicates and/or performs the corresponding medical treatments.	
	7. Provides health education and self-care advice.	
	8. Indicate, if necessary, the referral to the corresponding specialty, complying with the referral and counter-referral rules.	
	9. Manage with the patient solutions to the problems raised in the consultation and the actions derived from them.	
	10. Respect and enforce, under all circumstances, biosecurity and asepsis standards.	
	11a. Evaluation of vital signs (blood pressure, pulse, respiration and temperature)	
	11b. Measuring weight and height of infants, children and adults	
	11c. Screening for visual acuity	
	11d. Fundus	
	11e. Surface electrocardiogram	
	11f. Rectal examination and anoscopy	
	11g. Speculoscopy in women and taking Pap smears	
	11 a.m. Breast exam	
	11i. Otoscopy and rhinoscopy	
	11j. Lumbar puncture	
	11k. Nasogastric intubation	
	11l. Oro-tracheal intubation	
	11m. Administration of solutions and medications by intravenous injection or injection	
	11n. Subcutaneous and intramuscular injections	
	11th. Venous cannulation	
	11p. Bladder catheterization	
	11q. Abdominal paracentesis	
	11r. Thoracentesis and/or continuous aspiration in case of pleural collections or spontaneous pneumothorax	
	11s. Drainage of superficial suppurative collections (subcutaneous cellular)	

11t. Healing and suturing of simple wounds	
11u. Immobilization and transfer of patients	
11v. Washed and dressed for stay in operating room	
11w. Care of a eutocic delivery	
Scientific thinking and research	
12. Use critical thinking, clinical reasoning, evidence-based medicine, and scientific research methodology in managing information and addressing medical and healthcare problems.	
13. Look for information from reliable sources.	
14. Critically analyze scientific literature.	
15. Plan and indicate complementary studies taking into account the sensitivity, specificity, positive predictive value and negative predictive value of the tests.	
16. Interpret and prioritize the data obtained to reformulate the diagnostic hypotheses.	
17. Analyze the cost/benefit of different diagnostic and therapeutic practices.	
Professionalism	
18. Critically evaluates his/her own professional practice.	
19. Participate in the presentation and discussion of clinical cases among colleagues.	
20. Develop self-learning and/or independent study activities individually and/or in a peer group and/or with other members of the health team.	
21. Above all, seek to maintain the patient's health.	
22. Provides maximum assistance to patients, putting their interests before his own, respecting cultural diversity and beliefs.	
23. Respect the rights and privacy of patients and the confidentiality of medical consultations.	
24. Respect bioethical standards when indicating studies and/or treatments, referring to the corresponding Committee in dilemma situations.	
25. Respect bioethical standards when proposing the inclusion of patients in clinical studies.	
26. Report notifiable diseases	
27. Respect the legal norms that regulate professional practice	
28. Provides support and/or containment to the patient and/or his/her family by transmitting all types of information about diagnosis, prognosis and treatment	
29. Provides the patient and/or family with sufficient and appropriate information to obtain consent to perform procedures and/or treatments.	
30. Establishes effective written communication through medical history and other records.	
31. Knows and values the skills and competencies of other health professions and acts within the multi-professional team.	
32. Request timely consultations with other health professionals to arrive at an appropriate diagnosis and treatment through interdisciplinary work.	

	33. Assume a positive attitude towards teaching by collaborating in undergraduate and graduate teaching.	
	Population health and health systems	
	34. Identify groups in the community at risk of becoming ill or dying due to behaviors, lifestyles, working conditions, nutritional status, and housing and environmental characteristics.	
	35. Identify health problems in each community and participate in the development, implementation, and evaluation of health promotion programs and prevention of prevalent, emerging, and re-emerging pathologies.	
	36. Promotes the improvement of the population's lifestyles within the framework of Primary Health Care	
	37. Plan primary, secondary and tertiary prevention actions for the risk groups identified in each community	
	38. Uses the basic principles of health services administration and program management and knowledge of the sector's organization in individual and/or community practices.	
	39. Comply with current regulations and activities specified in ongoing health programs.	
	40. Acts in an interdisciplinary and intersectoral manner	