International Journal of New Education
ISSN: 2605-1931 • Núm. 16 - Diciembre 2025 • Págs. 67-85

Level of Research Competencies in Nursing Students in Morelos, Mexico

Enviado: 19 de junio de 2025 / Aceptado: 21 de noviembre de 2025 / Publicado: 31 de diciembre de 2025

MARTÍN MAURICIO BRETÓN DE LA LOZA
martin.breton@uaem.mx
0000-0001-9921-4014

MARÍA ALEJANDRA TERRAZAS TERRAZAS MERAZ
maria.alejandra@uaem.mx
0000-0002-6821-5732

OFMARA YADIRA ZÚÑIGA HERNÁNDEZ
ofmara.zuniga@uaem.mx
0000-0002-4773-0102

PAOLA ADANARI ORTEGA CEBALLOS
paola.ortega@uaem.mx
0000-0002-6989-727X

VIRIDIANA MARIELY SOLÍS DÍAZ
viridiana.solis@uaem.mx
0009-0003-7719-3875

CLAUDIA RODRIGUEZ LEANA
claudia.rodriguezl@uaem.mx
0009-0001-7929-0500

BEATRIZ LIZBETH RODRÍGUEZ BAHENA
beatriz.rodriguez@uaem.mx
0009-0002-6343-3068

Todos los autores pertenecen a la Universidad Autónoma del Estado de Morelos, México.

DOI 10.24310/ijne.16.2025.21999

ABSTRACT

Competency is understood as the demonstrated individual capacity to apply knowledge, skills, and personal characteristics to meet specific demands or requirements in a given situation. In the field of nursing, students are expected to demonstrate what they have learned after completing a program. Objective: To evaluate the evolution of research competencies among undergraduate nursing students at

RESUMEN

Competencias investigativas en estudiantes de enfermería de Morelos, México

Una competencia se comprende como la capacidad individual demostrada para aplicar conocimientos, habilidades y características personales a fin de satisfacer demandas o requerimientos específicos en una situación determinada. En el ámbito de la enfermería se espera que

a public university in Morelos, Mexico, by academic cycle. Methodology: This was a descriptive cross-sectional study corresponding to the baseline study of a cohort. The study population consisted of enrolled undergraduate students, who completed a previously validated digital questionnaire. Informed consent was included within the questionnaire. Sampling was by self-selection. The probabilistic sample size was calculated with a correction for a finite population. Statistical analysis was performed using Stata® version 14. Results: The sample consisted of 429 students, 347 (81%) women and 82 (19%) men. No significant differences were observed in the distribution by academic cycle or semester. Likewise, there were no differences in values and attitudes. It was observed that, based on the biological condition of being male or female, differences in basic competencies were marginal in cognitive skills and statistically significant in computational skills, with men showing higher scores. Conclusions: Research competencies should be developed through a theoretical-practical approach, fostering the acquisition of values, knowledge, skills, and attitudes within the nursing training process. Gender differences were identified, primarily in research experience. Finally, specialized competencies should be addressed in greater detail. This study confirms the importance of developing research skills in the university nursing context to strengthen professional practice. It was identified that specialized research competencies (such as Methodology and Research Experience) show the lowest level of perceived achievement. Implication: It is imperative that the curriculum reinforces the development of these specialized competencies through a sustained theoretical-practical approach, with emphasis on real research experience and computational mastery, to ensure that future professionals effectively base their practice on evidence.

Key words: Research Skills, Nursing Students, Nursing Research, Improvement Programs

un estudiante sea capaz de demostrar lo que aprendió después de haber completado un programa. Objetivo: Evaluar la evolución por ciclo académico de las competencias en investigación de los estudiantes de la Licenciatura en Enfermería en una universidad pública en Morelos. Metodología: Estudio transversal descriptivo correspondiente al estudio basal de una cohorte. El universo comprende estudiantes de licenciatura inscritos, a quienes se aplicó un formulario digital, validado previamente. Dentro del formulario, se integró el consentimiento informado. El muestreo fue por autoselección. Se calculó el tamaño de la muestra probabilística con corrección por población finita. El análisis estadístico se realizó con el programa Stata®v.14. Resultados: La muestra quedó conformada por 429 estudiantes, 347 (81%) mujeres y 82 (19%) hombres. No se observaron diferencias significativas en la distribución por ciclo ni por semestre. Así mismo, no hubo diferencias en las habilidades de valores y actitudes. Se observó qué entre la condición biológica de ser hombre o ser mujer, las diferencias en las competencias básicas se encontraron marginales en las habilidades cognitivas y estadísticamente significativas en las habilidades computacionales, apreciándose mejor puntaje entre los hombres. Conclusiones: Las competencias investigativas deben desarrollarse de manera teórico-práctica, fomentando la obtención de valores, conocimientos, habilidades y actitudes dentro del proceso formativo de la enfermería. Se identificaron diferencias por género, principalmente en la experiencia de investigativa. Se identificó que las competencias investigativas especializadas (como Metodología y Experiencia en Investigación) presentan el menor nivel de logro percibido. Es imperativo que el currículo refuerce el desarrollo de estas competencias especializadas mediante un enfoque teórico-práctico sostenido, con énfasis en la experiencia real de investigación y el dominio computacional, para asegurar que los futuros profesionales basen su práctica en la evidencia de manera efectiva.

***Palabras clave**: habilidades de investigación, estudiantes de enfermería, investigación en enfermería, programas de mejora*

1. BACKGROUND

The term "competencies" is polysemous. It is understood as the demonstrated individual capacity to apply knowledge, skills, and personal characteristics to meet specific demands or requirements in each situation. Therefore, it represents a set of aptitudes, knowledge, and skills that allow individuals to clarify concepts and contribute solutions to situations and problems. Academically, in the field of Nursing, students are expected to demonstrate their learning upon completion of a program and be able to respond to the growing need to improve the quality and relevance of their own professional training (Castro, Fernández, Callao & García, 2024). The term "skill" is used synonymously with "competency," referring to experience, mastery of performance, and excellence. In nursing, a field of knowledge that is strengthened by evidence to improve patient care, research is a fundamental tool that fosters the development of critical thinking and professional autonomy, which supports safe and high-quality professional practice (Fretel et al., 2025).

According to the Pan American Health Organization (PAHO, 1989): "The lack of knowledge and experience in research represents the main barrier in Latin American countries. Furthermore, in some nursing schools, research is considered irrelevant; they lack master's or doctoral nursing programs, and others lack undergraduate programs altogether." As a result, nursing professionals face complex work-related problems that require expert participation. Therefore, research skills are a fundamental tool for solving problems and improving the quality of care they provide (Hamilton, 2025). The most established models in Australia, Canada, and the United States have proposed eight core competencies that encompass diverse skills: verbal, reading, writing, digital, attitudinal, cultural, and interdisciplinary and interpersonal skills. These skills contribute to the generation of new knowledge, while also fostering critical and analytical thinking to address complex challenges, such as decision-making and problem-solving, with the aim of advancing their disciplines. It is also essential to recognize that information management skills are essential for success in the knowledge-based society, as a form of lifelong learning closely linked to training and professional practice (Briones et al., 2024; Castro, 2020).

Research competencies have been widely studied in various contexts. Rivera et al. (2009) reviewed quantitative research competencies and classified them into four dimensions: values, cognitive skills, procedural skills for managing computational tools, and procedural tools for methodological management. As early as 1993, Spencer & Spencer defined research competencies as "A competency is an underlying characteristic of an individual that is causally related to effective or superior performance in a job or situation, measured against a criterion."

(Spencer & Spencer, 1993). There is clear controversy between two positions: one suggests that research competency levels are deficient, while the other argues they are satisfactory and enable the acquisition of meaningful learning. Unfortunately, little research has explored the relationships between individual components of competencies, which would allow for identifying associations among influencing factors (Alonso et al., 2020; Cuevas et al., 2011; Castro, 2020).

According to the Pan American Health Organization (PAHO, 1989): "The lack of knowledge and experience in research represents the main barrier in Latin American countries. Furthermore, in some nursing schools, research is considered irrelevant; they lack master's or doctoral nursing programs, and others lack undergraduate programs altogether." As a result, nursing professionals face complex work-related problems that require expert participation. Therefore, research skills are a fundamental tool for solving problems and improving the quality of care they provide (Hamilton, 2025). The most established models in Australia, Canada, and the United States have proposed eight core competencies that encompass diverse skills: verbal, reading, writing, digital, attitudinal, cultural, and interdisciplinary and interpersonal skills. These skills contribute to the generation of new knowledge, while also fostering critical and analytical thinking to address complex challenges, such as decision-making and problem-solving, with the aim of advancing their disciplines. It is also essential to recognize that information management skills are crucial for success in the knowledge-based society, serving as a form of lifelong learning closely linked to professional training and practice (Briones et al., 2024; Castro, 2020). From this perspective, developing research skills is a process that empowers students to formulate appropriate research questions and engage in systematic information retrieval, while also mastering quantitative, qualitative, or mixed-methods research approaches and data analysis (Fretel, 2025). This fundamentally depends on a solid foundation in research methodology and the critical appraisal of scientific literature. Universities, within their academic sphere, are responsible for fostering research training in nursing, at both the undergraduate and graduate levels, inspiring students through sound and sustained methodological instruction throughout their professional development.

As paraphrased from Següel et al. (2015), given the close link between nursing professionals' activities and their operational context, these activities may be broadly categorized into clinical, teaching, administrative, and research domains. Regardless of the area in which they work, both basic and specialized skills are essential. All healthcare professionals must update their knowledge to perform their clinical roles more effectively and to understand the latest advances in biomedical science—particularly when participating in research projects.

Research competencies represent the set of aptitudes, knowledge, and abilities required to generate, validate, and clarify knowledge that contributes to solving problems encountered in nursing practice and other healthcare disciplines. Competency-based education, therefore, refers to the ability to perform, which entails observable and efficient actions. These are theoretically structured sets of activities, encompassing everything from problem formulation, hypothesis generation, and methodology design to obtaining results and drawing conclusions consistent with the initial problem and existing knowledge. Their primary aim is to resolve challenges observed in nursing practice (Alonso et al., 2020).

The university setting demands that research becomes a normalized process, enabling activities that foster innovation and efficiency, ultimately ensuring the successful training of competent professionals capable of addressing contemporary health issues (Espinosa et al., 2024). From a university perspective, a competency-based approach promotes the development of cognitive, attitudinal, procedural, and value-based skills that allow graduates to provide quality nursing care to individuals, families, and communities—care that is focused on solving problems aligned with the discipline of nursing (Universidad Autónoma del Estado de Morelos [UAEM], 2023). Furthermore, the University Model (UAEM, 2022) supports the generation of knowledge as a driver of development, aiming for students—regardless of the learning units they take or where they take them—to acquire key competencies, including research skills. This enables students to develop or strengthen skills such as observation, which encourages identifying the characteristics of objects or phenomena, as well as systematization, debate, and argumentation (Castro, 2020). All of these aspects foster knowledge generation and management, which is understood as a systematic process for capturing, organizing, and transferring knowledge that emerges as a key component for promoting innovation and creativity in educational settings (Acevedo et al., 2020).

According to Sánchez et al. (2018) and Díaz et al. (2020), research plays a key role in the educational process, as it generates knowledge and learning through the development of research capacities throughout the student's academic journey. In the health field, there has been a growing interest in integrating research with clinical practice. For this reason, it is recommended to implement initiatives within the curriculum that link clinical care with health research. The goal is twofold: to ensure students are trained in specialized fields and to prepare them for future professional roles where decision-making is based on the best available evidence (Castro-Rodríguez, 2023).

Research is the foundation for safe and high-quality professional practice. A low level in these competencies limits the nurse's ability to critically adopt the best available evidence,

make complex clinical decisions, and solve health problems, directly impacting the quality and safety of patient care (Eppley & Paul, 2021).

Despite the relevance, there is a gap in the literature regarding the evolution of the perceived achievement of research competencies throughout the academic cycles and, especially, in the development level of specialized competencies (theoretical framework, methodology, results). This study aims to specify this deficit to inform focused curricular intervention strategies.

The general objective of this study is to assess the evolution of research competencies across academic cycles among students enrolled in the Bachelor of Nursing program at a public university in Morelos.

2. MATERIALS AND METHODS

2.1. Study Design

A descriptive and analytical cross-sectional study, corresponding to the baseline study of a cohort. The level of perceived achievement of research competencies in undergraduate Nursing students at a public university in Morelos, Mexico, was evaluated.

2.2. Population and Sample

The study universe comprised undergraduate students enrolled in the different academic cycles (basic, professional, and advanced) during the period [Indicate the application period, e.g., Fall 2025]. The sampling was non-probabilistic by self-selection or convenience, through the dissemination of an open invitation to participate in the study via institutional channels. The probabilistic sample size was calculated with correction for a finite population, obtaining a final sample of 429 students who agreed to participate.

2.3. Data Collection Instrument

The Research Competencies questionnaire by Zúñiga et al. (2022) was used, a previously validated instrument to measure the student's perception of their domain in research skills. The questionnaire uses a 5-point Likert scale (where 1 is "Very low achievement" and 5 is "Very high achievement") and was administered using a digital form (Google Forms). Within the

form, the first section consisted of digital informed consent, followed by the collection of sociodemographic data (academic cycle, age, gender).

Table 1. Dimensions of the Research Competencies Questionnaire

Dimension (D)	Evaluated Focus	Example Item (Perceived Achievement)
D1. Values and Attitudes	Ethics, social commitment, responsibility, and collaborative work in research.	"I actively collaborate and easily integrate into a team to develop a research project."
D2. Theoretical Framework	Ability to search, select, and analyze scientific literature to support a study.	"I identify the most relevant and reliable sources of scientific information for my area of study (e.g., databases, indexed journals)."
D3. Computational Skills	Use of software and technological tools for data management, processing, and presentation.	"I have the ability to use a statistical program (e.g., Stata, SPSS) for the analysis of results."
D4. Critical Thinking	Capacity to critically evaluate the validity, relevance, and applicability of the scientific evidence found.	"I critically read research articles to identify their strengths, limitations, and potential methodological biases."
D5. Problem Formulation	Ability to identify relevant research problems and structure research questions, objectives, and hypotheses.	"I know how to formulate clear, pertinent research questions that can be answered through an empirical study."
D6. Research Designs	Knowledge and application of different types of designs (quantitative, qualitative, mixed) for solving a problem.	"I distinguish between an experimental, quasi-experimental, and non-experimental design, and I know which is appropriate for my research question."
D7. Methodology	Mastery of sampling techniques, data collection, and operational procedures for study execution.	"I know how to select the appropriate technique and type of sampling (e.g., probabilistic or non-probabilistic) for a specific study."
D8. Instruments	Capacity to build, adapt, or select valid and reliable instruments to measure study variables.	"I have the capacity to evaluate the reliability and validity of a measurement instrument (e.g., questionnaire or scale) before its application."
D9. Data Analysis	Ability to select and apply the appropriate statistical tests or qualitative procedures to process the collected data.	"I know how to select the appropriate statistical test (e.g., Student's t-test, Chi-square) according to the type of variable and the study objective."
D10. Discussion and Conclusions	Ability to interpret results, contrast them with theory, establish the contribution, and suggest future research lines.	"I can discuss my research findings by contrasting them with the results of previous studies in the scientific literature."
D11. Research Experience	Level of practical participation in real research activities and projects (mentoring, dissemination, etc.).	"I have participated as an assistant or collaborator in the data collection of a formal research project."

2.4. Statistical Analysis and Validation

Statistical analysis was performed with Stata®v.14 software. Descriptive statistics were used to characterize the sample and the perceived achievement level of each competency. Non-parametric tests were used to evaluate differences between groups (cycle, gender), considering that the dependent variable of perceived achievement does not follow a normal distribution.

2.5. Validation of the Measure in the Current Sample

Recognizing that the reliability of an instrument is sample-specific, a re-evaluation of internal consistency was conducted. The Cronbach's Alpha coefficient was calculated for each dimension, yielding values between 0.75 and 0.92, which confirms adequate to excellent internal consistency of the instrument in the study population.

3. RESULTS

The final sample consisted of 429 students, of whom 347 (81%) were women and 82 (19%) were men. No significant differences were observed in the distribution by academic cycle or semester. Likewise, no differences were reported in students' self-perceived development of skills related to values and attitudes.

In Table 2, it can be observed that, regarding the biological condition of being male or female, the differences in the dimensions in which the basic competencies were classified are marginal in the cognitive skills dimension and statistically significant in the computational skills dimension, with men perceiving themselves as having greater proficiency than women. Although the questionnaire had already been validated in previous studies, the reliability levels of each scale were reassessed using Cronbach's Alpha test. All scales demonstrated good to very good reliability ($\alpha > 0.70$). The sum scores of each scale were standardized as percentages to facilitate easier interpretation.

Table 3 presents the median percentage scores perceived for the achievement of each competency dimension, along with the corresponding interquartile range (IQR), the number of items, and the reliability level obtained for each scale.

Table 2. Comparison of characteristics and perception levels of competencies by gender (n=429)

	Female (n=347)		Male (n=82)		Total (n=429)		c^2
Category	**n**	**%**	**n**	**%**	**n**	**%**	**(p-value)**
Educational Program Cycle							
Basic Training	164	47.3	37	45.1	201	46.9	0.2258
Professional Training	134	38.6	34	41.5	168	39.2	-0.893
Specialty Training	49	14.1	11	13.4	60	14	
Semester							
First	125	36	30	36.6	155	36.1	0.5717
Second	87	25.1	18	22	105	24.5	-0.903
Third	86	24.8	23	28	109	25.4	
Fourth	49	14.1	11	13.4	60	14	
Dimension 1: Values and Attitudes							
Level							
Low	90	25.9	22	26.8	112	26.1	1.7596
Average	185	53.3	38	46.3	223	52	-0.415
High	72	20.7	22	26.8	94	21.9	
Dimension 2: Cognitive Skills							
Level							
Low	96	27.7	16	19.5	112	26.1	4.932
Average	174	50.1	39	47.6	213	49.7	-0.085
High	77	22.2	27	32.9	104	24.2	
Dimension 3: Computer Skills							
Level							
Low	102	29.4	11	13.4	113	26.3	13.0173
Regular	181	52.2	44	53.7	225	52.4	-0.001
High	64	18.4	27	32.9	91	21.2	
Dimension 4: Oral and Written Communication							
Low	102	29.4	12	14.6	114	26.6	7.4974
Average	162	46.7	45	54.9	207	48.3	0.024
High	83	23.9	25	30.5	108	25.2	
Dimension 5: Basic Technical Domain							
Low	100	28.8	13	15.9	113	26.3	6.4871
Average	184	53	48	58.5	232	54.1	0.039
High	63	18.2	21	25.6	84	19.6	
Dimension 6: Theoretical Framework							
Low	94	27.1	16	19.5	110	25.6	5.9005
Average	184	53	40	48.8	224	52.2	0.052
High	69	19.9	26	31.7	95	22.1	

	Female (n=347)		Male (n=82)		Total (n=429)		c^2
Category	n	%	n	%	n	%	(p-value)
Dimension 7: Methodology							
Loe	97	28	17	20.7	114	26.6	1.8506
Average	166	47.8	42	51.2	208	48.5	0.396
High	84	24.2	23	28	107	24.9	
Dimension 8: Results							
Low	96	27.7	21	25.6	117	27.3	2.3486
Average	188	54.2	40	48.8	228	53.1	0.309
High	63	18.2	21	25.6	84	19.6	
Dimension 9: Discussion							
Low	89	25.6	21	25.6	110	25.6	1.1535
Regular	214	61.7	47	57.3	261	60.8	0.562
High	44	12.7	14	17.1	58	13.5	
Dimension 10: References							
Low	96	27.7	14	17.1	110	25.6	4.475
Average	174	50.1	44	53.7	218	50.8	0.107
High	77	22.2	24	29.3	101	23.5	
Dimension 11: Experiences in Research							
Low	94	27.1	13	15.9	107	24.9	7.6305
Average	181	52.2	42	51.2	223	52	0.022
High	72	20.7	27	32.9	99	23.1	

c^2:Chi-squared test

Table 3. Description of the standardized point sum in percentages and reliability levels of the scales (n=429)

Scale	Median	RIC		Min	Max	Items	Alpha
D1: Attitudes and Values	90	84.3	94.3	50	100	7	0.733
D2: Cognitive Skills	84.3	77.1	90.0	40	100	7	0.911
D3: Computer Skills	81.7	71.7	90.0	6.7	100	6	0.839
D4: Communication Skills	74.3	62.9	84.3	7.1	100	7	0.845
D5: Basic Technical Proficiency	80	70	90.0	24	100	5	0.893
D6: Theoretical Framework	80	70	87.5	0	100	4	0.938
D7: Methodology	80	71	86.0	10	100	10	0.971
D8: Results	83.3	73.3	90.0	0	100	3	0.941
D9: Discussion	80	73.3	90.0	0	100	3	0.917
D10: References	80	66.7	86.7	0	100	3	0.935
D11: Research Experience	71.3	52.5	80.0	0	100	8	0.960

Notes: IR: Intercuartile (p25-p75), Alpha: Alpha de Cronbach

The study results indicate that basic competencies tend to strengthen as students advance through their academic training. However, only the values dimension shows a perceived achievement of more than 80%, as shown in Figure 1. In contrast, for specialized competencies, students in no academic cycle reported an average perceived achievement greater than 80% (see Figure 2).

Figure 1. Sum of competencies by dimension of basic research skills (n=429)

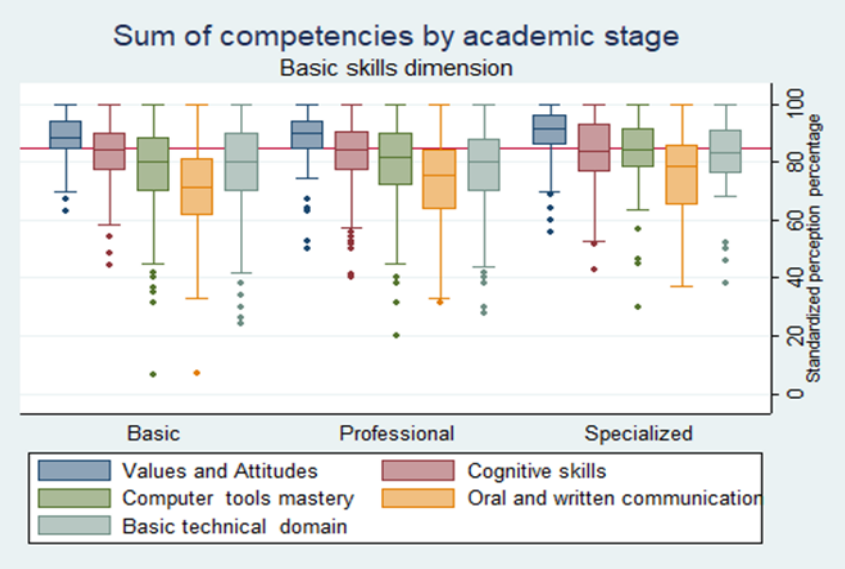
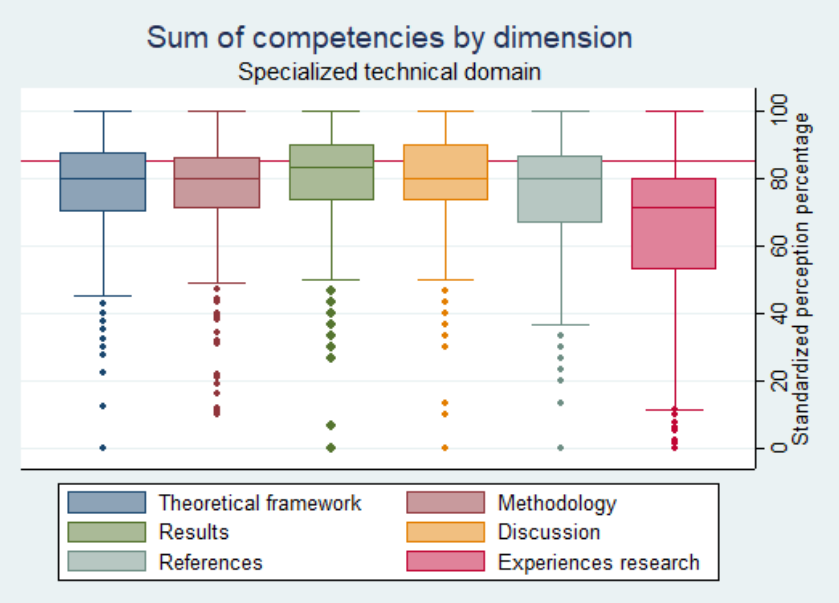


Figure 2. Sum of competencies by dimension of specialized technical expertise (n=429)



Although a trend toward improvement in basic competencies is observed with academic advancement, the fact that there are no significant differences in most dimensions between cycles (except for sample distribution) suggests that the learning progression is not robust or consistent enough throughout the program, warranting a curricular review.

The finding of a statistically significant difference in computational skills in favor of men, and in research experience, underscores a potential gender gap in the development of essential tools for modern research (statistical software management, databases). This gap may limit future female participation in research projects and, consequently, in the generation of nursing knowledge. The implementation of remedial workshops or targeted mentorships for female students is suggested.

4. DISCUSSION

The literature review revealed that nursing professionals require a set of competencies to apply their knowledge, skills, and attitudes in order to make clinical judgments. Through the nursing care process, they address problems and carry out care-related actions. In this sense, competencies are manifested in professional practice, oriented toward care, and based on research, comprehensive care, ethics, and education (Hernández et al., 2022).

Studies such as that by Medina Andrade (2014) indicate that cognitive and procedural research competencies among nursing students are deficient, with average scores of 5.7 (SD = 1.1) and 4.9 respectively, on a 0-to-10 scale. Cuevas et al. (2011; 2012) mention that the research methodology course taught at nursing schools has enabled students to successfully acquire and develop research competencies by the end of the semester compared to its beginning. In the same way, it emphasizes that developing research competencies is important so that students achieve meaningful learning (Medina, 2014; Cuevas et al., 2011; Cuevas et al., 2012). Similarly, in our baseline study, we found that cognitive skills improve progressively throughout academic cycles, although no significant differences were observed.

Harrison et al. (2005) argue that, at the undergraduate level, it is essential for students to understand the various stages of the research process, paying special attention to the information search phase, data analysis methods, and the effective use of statistical software. Accordingly, this study assessed students' mastery of both basic (word processors, spreadsheets, presentations) and specialized (statistical and qualitative data analysis software) computer tools, which, as expected, improved with academic progression (see Figure 1).

Trujillo et al. (2020) analyzed the research competencies of nursing students through 198 abstracts presented at scientific forums. They found that although teamwork competency is well developed, there are deficiencies in cognitive and procedural skills related to methodology and data analysis. In our study, teamwork was evaluated under the values and attitudes dimension (Zúñiga et al., 2022), which was the only dimension with perceived achievement above 80%, while methodology and results management were perceived less positively—methodology being the lowest rated (see Figure 2). The need for a more integrated theoretical-practical development is confirmed by the discrepancy between the high perceived achievement in the dimension of Values and Attitudes (D1) and the low achievement in procedural dimensions such as Methodology (D7) and Research Experience (D11) (See Table 3, Figures 1 and 2).

According to Castro and Simian (2018), methodological instruction and critical analysis of literature are essential competencies that must be fostered in higher education institutions starting at the undergraduate level. It is crucial for faculty to encourage nursing students to take an active role in their own learning by implementing teaching strategies that promote self-directed learning (Aguilar & Unda, 2016). The dimensions that include theoretical framework analysis and methodology are perceived as being at least 80% achieved by at least half the sample (see Table 2); however, if satisfactory achievement is defined as reaching 85%, only a small number of students meet this threshold (see Figure 2).

A quasi-experimental study evaluating the effectiveness of an educational program on the development of research skills in fourth-year nursing students showed that 79.2% of the experimental group reached an advanced level after the intervention (Rojas Salazar et al., 2019). Authors such as Heredia agree that competency-based education in research prepares future nurse-scientists to participate in the global scientific community. Nursing schools have identified the development of basic competencies as an area of opportunity guiding research instruction. Research competencies are acquired and developed during the students' academic training—particularly during semesters that include modules such as *Scientific Research* or *Thesis Seminar*, commonly offered in higher education institutions in Mexico and other Latin American countries (Rivera et al., 2009). In Chile, the Ministry of Education has developed the Curriculum Renewal Project, which aims to design a competency-based curriculum framework. This approach is based on so-called generic competencies (such as information-seeking skills, knowledge, communication, teamwork, and leadership) and specific competencies needed for each profession (Araneda, 2004).

A widely studied issue is the low male representation in the nursing profession. Between 85% and 90% of healthcare providers are women. Factors such as male dropout in the early

years of training and the perception of nursing as a female profession have been analyzed. Some highlighted reasons include stereotypes about sexual orientation, limited knowledge about the profession, and gender-based stereotypes that discourage men from entering this field. According to the U.S. Bureau of Labor Statistics, the percentage of male nurses increased from 8.9% in 2011 to 13% in 2021. Contributing factors include changing gender attitudes and growing demand for healthcare professionals. In Mexico, 181,410 students were reported to be enrolled in nursing programs in 2024, with 77.4% being women and 22.6% men. First-year enrollment was similarly distributed (76.7% women and 23.3% men). These trends are consistent with those observed in the state of Morelos (Asociación Nacional de Universidades e Instituciones de Educación Superior [ANUIES], 2024). It is evident that nursing, as a science, must academically prepare its students in research competencies. "Nursing became a science when it adopted scientific thinking as its way of acquiring knowledge," as stated by Santos et al. (2004).

Professional experience plays an important role in patient care, helping professionals become more skilled and competent in their daily practice. In this study, nursing professionals self-assessed as competent across the five indicators of basic competencies (ethics, comprehensive care, research, education, care management) as well as the global index. These findings are consistent with Hernández, Moreno, and Chavarría (2022), where nursing professionals also rated themselves as competent across both the global index and specific indicators. This could be attributed to the fact that nurses progressively strengthen their level of competence through clinical practice experience, continuing education, and academic advancement.

Curricular Proposal: Given that specialized competencies (D6 to D11) have the lowest achievement, it is recommended to align methodology teaching with mandatory practical immersion experiences, such as structured participation in research seedbeds or carrying out a real research project starting from the professional cycle, so that theoretical knowledge translates into technical and procedural mastery.

5. CONCLUSIONS

In undergraduate nursing education, research competencies are understood as both basic and disciplinary— the latter also considered as specialized. The current trend appears to be preparing students to understand the principles of research and gain experience in this area, without overburdening the curriculum. Based on the reviewed literature and the findings of this study, it is concluded that the development of research competencies must be implemented

through both theoretical and practical approaches. This should allow for the cultivation of values, knowledge, skills, and attitudes within the framework of student training, using activities intrinsic to the field of nursing.

The findings of this study highlight the link between research competencies and the university context. The competency dimensions evaluated are crucial for guiding specific didactic strategies aimed at their application in professional development. Therefore, the contribution of this project is to emphasize the importance of promoting student engagement in the research process. When comparing basic competencies, gender differences were identified, particularly in research skills grouped by dimension, most notably in research experience, despite the assumption of equal opportunity for both men and women. Likewise, specialized competencies should be further developed as a key area within the training of nursing students. Future research is recommended to explore specialized experiences more deeply, as these may offer innovative strategies for both curriculum design and student training processes.

The original contribution of this baseline study is the empirical identification of a persistent insufficiency in the development of specialized research competencies throughout academic cycles, which demands a formative reorientation. As future research lines, it is suggested: 1) Conducting a longitudinal analysis of the cohort to measure real change over time and not just perception; and 2) Evaluating the teaching and institutional barriers that limit the acquisition of these specialized competencies.

6. REFERENCES

Acevedo Correa, Y., Aristizábal Botero, C., Valencia Arias, A. & Bran Piedrahita, L. (2020). Formulación de modelos de gestión del conocimiento aplicados al contexto de instituciones de educación superior. *Información tecnológica*, *31*(1), 103-112. https://dx.doi.org/10.4067/S0718-07642020000100103

Aguilar Trejo, M. & Unda Franco, L. E. (2016). *Aprendizaje activo: Prácticas Innovadoras de la Universidad de Celaya.* (1ra Edición, Vol I). Celaya, Guanajuato, México: Educación Superior de Celaya.

Alonso Trujillo, J., Cuevas Guajardo, L., y & Alonso Ricardez, A. (2020). Diagnóstico sobre competencias en investigación de estudiantes de Enfermería. *Revista CuidArte*, 9(17). https://doi.org/10.22201/fesi.23958979e.2020.9.17.72755

Asociación Nacional de Universidades e Instituciones de Educación Superior [ANUIES]. (2024). *Reporte de Formatos 911 de Educación Superior aplicados por la Secretaría de Educación Pública en coordi-*

nación con la ANUIES, para la carrera de Enfermería. Anuario Educación Superior – Técnico Superior, Licenciatura y Posgrado 2023-2024 V.1.2. https://www.anuies.mx/informacion-y-servicios/informacion-estadistica-de-educacion-superior/anuario-estadistico-de-educacion-superior

Astin, A. W. (1991). *Assessment for Excellence: The Philosophy and Practice of Assessment and Evaluation in Higher Education, Nueva York.* American Council on Education and Mac-millan.

Briones Mera, A. R., Meza Alcivar, E. G., Fritz Nahin, S. A. D. & Macias Martínez, D. A. (2024). Innovación y competencias investigativas en universidades públicas. *Revista Venezolana De Gerencia*, 29(106), 776-792. https://doi.org/10.52080/rvgluz.29.106.20

Castro Aquino, R. C., Fernández Otoya, F. A., Callao Alarcón, M., & García González, M. (2024). Competencias genéricas de los estudiantes de enfermería. *Estudios Del Desarrollo Social: Cuba Y América Latina*, 12(Número Especial), 61–70. Recuperado a partir de https://revistas.uh.cu/revflacso/article/view/8978

Castro Aquino, RC., Fernández-Otoya, FA., Callao-Alarcón, M., García González, M. (2024). Competencias genéricas de los estudiantes de enfermería. *Estudios de Desarrollo Social: Cuba y América Latina.* [Internet], 12(2), 61-70. http// https://revistas.uh.cu/revflacso

Castro -Rodríguez, Y. (2020). Desarrollo de competencias investigativas en estudiantes de las Ciencias de la Salud. Sistematización de experiencias. *Duazary*, 17(4), 65–80. https://doi.org/10.21676/2389783x.3602

Castro -Rodríguez, Y. (2023). Iniciativas curriculares orientadas a la formación de competencias investigativas en los programas de las ciencias de la salud. *Latreia* [internet], 36(4). https://doi.org/10.17533/udea.iatreia.224

Castro, M. & Simian, D. (2018). La enfermería y la educación. *Revista Médica Clínica Las Condes, 29*(3), 301-310. https://www.elsevier.es/es-revista-revista-medica-clinica-las-condes-202-pdf-S0716864018300531

Cuevas Guajardo, L., Guillén Cadena, D. M., Martínez Correa, J. L., Ortiz Labastida, G. G., & Rocha Romero, V. E. (2012). Competencias en Investigación desarrolladas por un grupo de estudiantes de Enfermería. *Revista CuidArte*, 1(2), 12-21. https://doi.org/10.22201/fesi.23958979e.2012.1.2.69053

Cuevas Guajardo, L., Guillén Cadena, D. & Rocha Romero, V. E. (2011). Las competencias en investigación como puentes cognitivos para un aprendizaje significativo. *Razón y Palabra*, (77). Disponible en: https://www.redalyc.org/pdf/1995/199520010084.pdf

Díaz Rodríguez, M., Alcántara Rubio, L., Aguilar Garcia, D., Puertas Cristobal, E., & Cano Valero, M. (2020). Orientaciones formativas para un cuidado humanizado en enfermería: una revisión

integrativa de la literatura. *Enfermería Global*, 19(2), 640–672. https://doi.org/10.6018/eglobal.392321

Eppley, A. M., & Paul, P. (2021). The nurse's role in evidence-based practice, research, and quality improvement: Making the case for a unified approach. *The Journal of Continuing Education in Nursing*, *52*(9), 421-428. https://doi.org/10.3928/00220124-20210816-07

Espinosa Aguilar, A., Oria Saavedra, M., Rojas Ruíz, G. C., & Lepez, C. O. (2024). Competencias investigativas en docentes de enfermería. *Salud, Ciencia Y Tecnología*, 4, 705. https://doi.org/10.56294/saludcyt2024705

Fretel Quiroz , N. M., Correa Chuquiyauri, D. A., Pérez Guimaraez, L., Pinchi Fasanando L., Guizado Moscoso, E., & Cueva Muñoz, M. A. (2025). Habilidades investigativas en estudiantes de enfermería de una universidad particular del Perú. *Revista Tribunal, 5*(13), 662-675. https://doi.org/10.59659/revistatribunal.v5i13.294

Hamilton Paladines, L. S. (2025). La formación de competencias investigativas en estudiantes de enfermería: Eficacia de las estrategias pedagógicas más utilizadas. *Revista Maestro y Sociedad, 22* (3), 3025-3034. [internet]. http://maestroysociedad,uo.edu.cu

Harrison, L., Ray Hernández, A., Cianelli, R., Rivera, M. S. & Urrutia, M. (2005). Competencias en investigación para diferentes niveles de formación de enfermeras: Una perspectiva latinoamericana. *Ciencia y Enfermería*, XI (1), 59-71. https://www.redalyc.org/pdf/3704/370441790007.pdf

Hernández Pérez, L. M., Moreno Monsiváis, M. G., & Chaverría Rivera, S. (2022). Autoevaluación de competencias profesionales de enfermería, en un hospital público de tercer nivel en Guanajuato, México. *Horizonte Sanitario, 21*(2) Mayo-Agosto, 40-48. DOI: https://doi.org/10.19136/hs.a21n2.4681

Martínez Rodríguez, D., & Márquez Delgado, D. L. (2015). Las habilidades investigativas como eje transversal de la formación para la investigación. *Tendencias Pedagógicas*, 24, 347–360. https://doi.org/10.15366/tp2014.24.022.

Medina Andrade, G. I. (2014). *Competencias en investigación en estudiantes de licenciatura en Enfermería de la FES-I.* UNAM [Tesis de licenciatura, FES-I UNAM]. https://ru.dgb.unam.mx/bitstream/20.500.14330/TES01000723843/3/0723843.pdf

Obaya, V. A., Vargas, R. Y. & Delgadillo, G. G. (2011). Aspectos relevantes de la educación basada en competencias para la formación profesional. *Educación química*, *22*(1), 63-68. https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0187-893X2011000100011

Obregón Velasco, N., Rivera Heredia, M. E. & Cervantes Pacheco, E. I. (2010). *La formación de competencias para la investigación en las líneas de familia, género, recursos psicológicos y salud.* En:

Lepe, L.M, Vargas, M.L & Orozco, M. (coord.). (2010). Horizontes de la Psicología. A diez años de la labor académica en la UMSNH. México, Morelia: Fondo Ediciones Morevallado, S. de R.L. de C.V., p. 255-288.

Orellana, E., & Sanhueza, O. (2018). La enfermería y la investigación. *Revista Médica Clínica Las Condes*, *29*(5), 534-541. http://dx.doi.org/10.4067/S0717-95532011000200002

Pan American Health Organization [PAHO]. (1989). Análisis prospectivo de la educación en enfermería. *Educ Med Salud*, 23(2), 119-154. Disponble en: https://iris.paho.org/bitstream/handle/10665.2/39662/3156.pdf?sequence=1&isAllowed=y#:~:text=en%20enfermer%C3%ADa%20/%20129-,La%20educaci%C3%B3n%20en%20enfermer%C3%ADa,campos%20y%20niveles%20de%20atenci%C3%B3n.

Sánchez Ortiz, L., Melián Rivero, H., Quiroz Enríquez, M., Dueñas Pérez, Y., Suárez Denis, A., & Rojas Rodríguez, Y. (2018). Habilidades investigativas en estudiantes de 2do año de Licenciatura en Enfermería: ocasión para su desarrollo. *EDUMECENTRO*, *10*(1), 55-72. Disponible en; https://dialnet.unirioja.es/servlet/articulo?codigo=6233518

Santos, H., Rodriguez, B. & Rodríguez, A. (2004). *Metodología Básica de investigación en Enfermería.* España: Diaz de santos.

Següel Palma, F., Valenzuela Süazo, S. & Sanhueza Alvarado, O. (2015). El trabajo del profesional de enfermería: *Revisión de la literatura. Ciencia y enfermería, 21*(2), 11-20. https://dx.doi.org/10.4067/S0717-95532015000200002

Spencer, L. M., & Spencer, S. M. (1993). *Competence at Work: Models for Superior Performance.* John Wiley & Sons, Inc. Michigan University, USA.

Rivera Heredia, M. E., Arango Pinto, L. G., Torres Villaseñor, C. K., Salgado Brito, R., García Gil de Muñoz, F. L., & Caña Díaz, L. E. (2009). *Competencias para la investigación. Desarrollo de habilidades y conceptos.* Trillas / Universidad Simón Bolivar. México.

Rojas Salazar, A. Castro Llaja, L., Siccha Macassi. A. L. & Ortega Rojas, Y. (2019). Desarrollo de habilidades investigativas en estudiantes de enfermería: Nuevos retos en el contexto formativo. *Investigación Valdizana*, *13*(2), 107-112. DOI: https://doi.org/10.33554/riv.13.2.236

Trujillo, F., Fernández, M., Segura, A. & Jiménez, M. (2020). *Escenarios de evaluación en el contexto de la pandemia por la covid-19: la opinión del profesorado.* SantillanaLAB. Granada. España. URI: https://hdl.handle.net/10481/83688

Universidad Autónoma del Estado de Morelos [UAEM] (Ed.). (2022, Octubre 7). *Modelo Universitario 2022.* En: Órgano Informativo Universitario Adolfo Menéndez Samará No. 128, Año XXVII.

https://www.uaem.mx/organizacion-institucional/organo-informativo-universitario/Menendez_Samara_No_128c.pdf

Universidad Autónoma del Estado de Morelos [UAEM]. (2023). *Plan de estudios de la Licenciatura en Enfermería.* Facultad de Enfermería. Aprobado por Consejo Universitario en 2022. UAEM. Cuernavaca, Morelos, México. https://www.uaem.mx/admision-y-oferta/nivel-superior/licenciatura-en-enfermeria.php

Zúñiga, Hernández, O. Y., Terrazas, Meraz, M. A., Ortega, Ceballos, P. A., Carranco, Gómez, S., & Aguirre, Salgado, J. C. (2022). *Estudiantes universitarios y la necesidad de desarrollar habilidades de investigación: El caso de una Universidad universidad Pública pública en Morelos, México.* En: Nuevos retos para aprender y enseñar en Latinoamérica. Corporación Centro Internacional de Marketing Territorial para la Educación y el Desarrollo. Medellín, Colombia. Disponible en: https://editorialcimted.com/wp-content/uploads/2022/08/Los-nuevos-retos-para-aprender-y-ense%C3%B1ar-en-latinoam%C3%A9rica.pdf