

# Research Potential in Nursing Students: Competencies and Influencing Factors

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## ABSTRACT

**Background:** Nursing research expands scientific knowledge; advances practice and improves healthcare to enhance public well-being. It defines the scope of nursing and highlights its impact on individual health. Universities play a key role in conducting research, fostering student training, and translating knowledge into socioeconomic value. The objective is to determine the research competencies and associated factors in nursing students from a private university, 2024. **Methods:** Quantitative, descriptive and cross-sectional study. The population was 245 nursing students from the 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> semesters of a private university in Lima, Peru. The technique was the survey, and the instrument was a questionnaire. The instrument was developed virtually through the Google Forms platform. After data collection, the database was established in Microsoft Excel which was later exported to the statistical program IBM SPSS version 27. **Results:** 245 students who met the inclusion criteria participated. According to the level of research competencies, 40% had a low level, 39.2% a medium level and only 20.8% obtained a high level. The factors significantly associated with the level of research competencies in nursing students were having received motivation from a teacher, research interest, belonging to a group or seedbed, studying a research course outside their curricular mesh and publishing articles (Significance<0.05). **Conclusion:** Most of the students have a low level of research competencies. Although most of the students received motivation from a teacher to carry out research work. The future scope of this study on research competencies in nursing students focuses on identifying and strengthening key areas of research training. Nursing schools are encouraged to develop research courses from the first academic semesters, and to encourage students to publish articles in conjunction with their respective health research centers.

**Keywords:** Competency-Based Education; Nursing Research; Nursing Students

## INTRODUCTION

Nursing research generates knowledge that advances science, practice, and healthcare, with the aim of enhancing population health and well-being (Kim *et al.*, 2024). The nursing profession has advanced significantly over the past century, with the development of roles such as the Clinical Research Nurse (CRN) and the recognition of research as a fundamental component of healthcare. Research training is essential for establishing its foundational principles and fostering a positive attitude towards it. A cultural shift is required to standardise research within university education, enhancing students' perception and confidence in this field (Cetroni, 2024).

The increasing specialisation in nursing practice has led to the expansion of educational opportunities, including the development of doctoral programmes that prepare nurses as researchers and educators. This growth underscores the importance of evidence-based practice and high-quality academic writing in nursing. Advancing the profession relies on the application of rigorous research methods to generate, analyse, and

Received: November 13, 2024 Received in revised form: February 27, 2025 Accepted: March 3, 2025

disseminate knowledge. However, limited writing skills and a lack of understanding of ethical research standards remain significant challenges in the field (Arshabayeva *et al.*, 2024). Research enhances nursing practice by defining its scope, expanding the scientific knowledge base, and demonstrating its unique impact on individual health. Nursing educators must communicate research findings, conduct studies, and equip students to engage in the research process (Sunitha *et al.*, 2024).

Nurses are expected to base their practice on research evidence, which requires an understanding of the research process. However, undergraduate nursing students may find research courses unengaging or feel unprepared to conduct studies. Participation in experiential research projects can enhance their attitudes, knowledge, and research skills. Collaborative research projects between faculty and students foster interest in evidence-based research while supporting professional development and confidence in undertaking research roles (Sullivan *et al.*, 2024). Research training is crucial for fostering analytical skills and curiosity in future professionals while enhancing critical thinking through formative research (Vojvodic, 2024). Nursing students need a well-rounded education in theory, research, and clinical practice, supported by an improved curriculum and ethical clinical research opportunities to strengthen their knowledge at all academic levels (Senthilvel, 2023).

University research plays a fundamental carrying out scientific, technological and innovative activities, facilitating the training of students at both undergraduate and graduate levels. By developing attitudes and skills in research, contributes to the generation of solutions to problems. existing, involving social actors in each stage of the process, from the initial diagnosis to the final evaluation or the presentation of the results to the community (Moreno & Alfaro, 2022). Research is an essential function of the university. Without it, the university is limited to teaching science and knowledge generated by others, and not being a space for creativity, development and dissemination of knowledge aimed at solving social challenges. In addition, research is one of the main indicators of quality and excellence in university rankings at local and international levels. The more a university stands out in the field of scientific research, the greater its contribution to strengthening its educational programs and carrying out various scientific activities (Kajaman, 2022).

Universities now face the responsibility of transforming the knowledge produced by their researchers into value that drives socioeconomic development. Over the past two decades, a growing number of publications have examined the effectiveness of university research, focusing primarily on the efficiency of technology and knowledge transfer, as well as the commercialisation of these advances (Zhidebekkyzy *et al.*, 2023). It is crucial to recognise that the willingness to research of both university teachers and students is fundamental to guarantee educational quality. This factor plays a decisive role in scientific progress and is essential to foster a culture of scientific research. Furthermore, it is important to keep in mind that a university institution that does not generate new knowledge through its research activities does not truly fulfil the function of a university (Navarro, 2022).

In Peru, it is essential to approach research at the university considering both students and teachers. Studies indicate that scientific production among Peruvian teachers is limited, with the majority having no publications during their career. As for students, the modality of obtaining the degree by presenting a scientific article has shown benefits in countries with high scientific production, speeding up the degree process (Liñán, Díaz & Pulido, 2019). However, less than 2% of the degree works of Peruvian students are published in scientific articles, none indexed in Scopus, reflecting a possible lack of quality in the works or poor support from advisors, possibly related to the low scientific production of the latter (Diaz, 2023).

In 2016, the National Council of Science, Technology, and Technological Innovation (Concytec) conducted the first national census on research and development in Peruvian research centres. The findings indicated limited progress in technological research and development compared to Latin American OECD member countries. The role of universities in research in Peru has evolved. While the previous University Law (Law No. 23733) recognised research as an objective, the current University Law (Law No. 30220) emphasises its promotion and integration into quality standards for university accreditation. This requires institutions to ensure adequate research faculty, infrastructure, equipment, and financial resources to support sustainable research development (Liñán, Díaz & Capurro, 2020).

## Literature Review

Holistic nursing is an emerging and evolving field, particularly when considering the number of citations and publications in the past decade. Most of the research and collaboration have taken place in a few developed countries: the United States, Australia, and several European nations (Akyüz, Alkan & Şenturan, 2024). A previous study examined the integration of nursing students into clinical research through partnerships between educational institutions and research centres. Findings indicated that this collaboration provided students with innovative professional development opportunities, enhancing their understanding of practice areas such as clinical research and the specialised role of the clinical research nurse, which are not included in their coursework (Reilly *et al.*, 2024),

Castro Rodríguez (2021), in Peru, conducted a study on the factors associated with research skills in dental university students (N = 205) where it was determined that a higher score in research skills was related to belonging to a Student Scientific Society (OR = 1.452; 95% CI = 1.05-1.98) and a research group (OR = 1.125; 95% CI = 1.02-1.45); having published articles (OR = 1.245; 95% CI = 0.65-1.55) and having presented in competitions (OR = 1.145; 95% CI = 1.08-1.35). Estrada *et al.* (2024) conducted research in Peru with 302 students, where it was found that 72.8% of the students had moderately developed research skills, 17.5% did not have them developed, and 9.6% had them developed. In addition, when evaluating the dimensions, it was found that organisational, communication, and collaborative skills were also moderately developed. On the other hand, it was determined that research skills were significantly associated with membership in research groups and the number of hours per week that students dedicated to research activities ( $p < 0.05$ ).

Fuster-Guillén *et al.* (2022) in Peru, in their research on the factors associated with cognitive competences in research, determined that 29% of research capacity was determined by the teacher's orientation in research methodology, and 16% by initial research training. However, research ethics did not influence research capacity. 32.3% of students have developed reflective research skills, specifically in the search, selection and argumentation of the background of the research work and the problematic situation.

## Theoretical Reference Framework

In any university, it is essential to promote research at all educational levels, providing the necessary resources so that both students and teachers can explore topics of interest, generating new knowledge or strengthening the knowledge already acquired. This implies establishing a series of competencies that every researcher must develop during their academic training. Competence is defined as the set of skills, aptitudes, attitudes and knowledge related, in this case, to the generation of research in the institution (Marrero & Pérez, 2014). Research competencies have two dimensions: methodological, which address the activities that are planned, designed and carried out in the research process, within them are the problem, the theoretical framework, the methodological framework and the results; generic research competencies, associated with the personal fulfilment of the student (Vilcapoma, 2022).

The use of research and cultural competence are fundamental requirements for professional practice, enabling nursing, through its various specialisations, to understand and provide quality care to individuals from diverse backgrounds and lifestyles in a highly technological context (Eraso & Montenegro, 2024).

## Importance and Justification

Research skills are not only an indicator of university quality but also serve to address both local and national problems, that is, a student with good research skills can contribute to the solution of public health problems. A nursing student must have these skills at a good level of development because this ability will allow him or her to contribute to society to solve community health problems, hospital teaching and even research, which is why the university must provide the resources so that students can acquire these skills during their professional development. This work will provide information about the state of research skills in the selected population, which will serve to formulate strategies that address this problem with the aim that students in training and graduates have research skills in favour of the national reality. Due to this, the objective of the study is to determine the research skills and associated factors in nursing students from a private

university, 2024.

## METHODOLOGY

### Approach and Design

Study with a quantitative, descriptive and transversal approach. It is quantitative because the calculation of the variable will be numerical, descriptive because the behaviour of the variable in its natural environment will be characterised and transversal because the variable will be measured only once (Hernández-Sampieri, Fernández-Collado & Baptista-Lucio, 2014).

### Population, Sample and Sampling

The number of students enrolled during the second semester of 2024 was 297 nursing students from the 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> semesters at a private university in Lima, Peru. The distribution of enrolled students by semester, according to the Academic Registration area, is as follows:

Semester	Number of Students
7	75
8	119
9	55
10	48
Total	297

In Table 1, the sample was census-based and included the entire target population. The sampling will be non-probabilistic by convenience, meaning students will be selected according to inclusion and exclusion criteria (Hernández-Sampieri, Fernández-Collado & Baptista-Lucio, 2014). Despite the invitation being extended to all students, 245 university students completed the form, resulting in a response rate of 82.49%.

### Inclusion Criteria

- Students of both sexes over 18 years of age
- Students of the 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> cycle of the Professional Academic School of Nursing
- Students enrolled during the 2024-2 semester
- Students who sign the informed consent

### Exclusion Criteria

- Students who are not present at the time of data collection
- Students who do not sign the informed consent

### Research Technique and Instrument

The data collection technique used was a survey, and the instrument employed was a questionnaire. The questionnaire developed by Ortega and Jaik "Self-perception scale in investigative competences" is composed of 38 items measured on a Likert-type scale (none = 1, rarely = 2, occasionally = 3, very high = 4), distributed in five dimensions: problems, theoretical framework, methodological framework, results and generic competencies. The validity was determined by the Aiken V coefficient categorising it as a valid instrument and for reliability the Cronbach Alpha was calculated obtaining a score of 0.98 establishing the questionnaire as reliable. The levels of the total questionnaire according to scores are (Vilcapoma, 2022).

### Data Collection Procedure

The instrument was developed virtually through the Google Forms platform. The first part of it will consist of the informed consent and then the questions specific to the instrument. First, the faculty was asked for the corresponding authorisations for the entry of the selected population into the classrooms. Secondly, the fieldwork was carried out according to the established schedule.

### Statistical Process and Analysis

After data collection, the database was established in Microsoft Excel which was later exported to the

statistical program IBM SPSS version 27, where the variables were calculated, determining the descriptive and inferential analysis of the variables, the Chi Square coefficient and a significance level less than 0.05 were used to establish the association with the selected factors.

### Ethical Consideration

The researchers obtained ethical clearance from Ethics Committee of the University of Sciences and Humanities, Lima, Peru, with reference number ACTACEIN°. 080 (Code-098-24) on 31<sup>st</sup> July 2024.

### RESULTS

Of the 297 students enrolled during the second semester of 2024 from the seventh to the tenth semester, 245 students participated, meeting the inclusion criteria.

**Table 2: General Characteristics of Nursing Students (n=245)**

Variable		n	%
Age range	18 to less than 29 years old	137	55.9%
	29 to less than 40 years	76	31.0%
	more than 40 years	32	13.1%
Total (n)		245	100%
Sex	Male	86	35.1%
	Female	159	64.9%
Total		245	100%
Academic semester	7	52	21.2%
	8	94	38.4%
	9	52	21.2%
	10	47	19.2%
Total (n)		245	100%

Source: Instrument Application

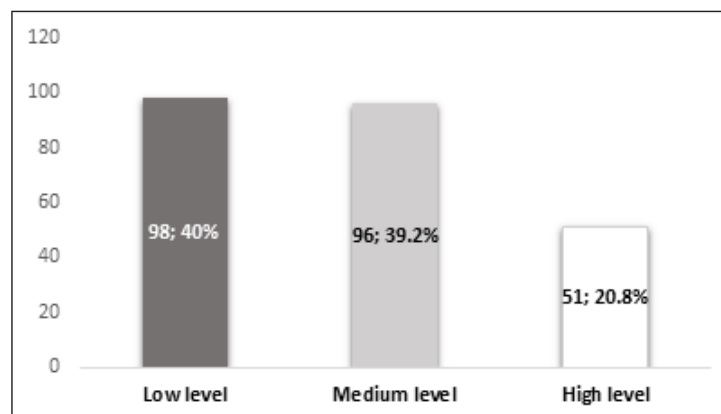
Regarding Table 2, it is evident that the largest proportion of nursing students (55.9%) are between the ages of 18 to less than 29 years old. Additionally, the female gender predominates, with 64.9% (n=159) of participants, and 38.4% (n=94) of the students are in the 8<sup>th</sup> semester, making them the majority of participants.

**Table 3: Descriptive Analysis of Associated Factors in Nursing Students (n=245)**

Associated Factor		n	%
Total (N)		245	100%
Have you received motivation from any teacher to do research work?	No	167	68.2%
	Yes	78	31.8%
Are you interested or interested in research?	No	181	73.9%
	Yes	64	26.1%
Have you failed a Research course at least once?	Yes	58	23.7%
	No	187	76.3%
Do you belong to any research group?	Yes	35	14.3%
	No	210	85.7%
Have you entered any research competitions?	Yes	28	11.4%
	No	217	88.6%
Have you studied any research courses outside of your university curriculum?	Yes	42	17.1%
	No	203	82.9%
Have you published any articles?	Yes	12	4.9%
	No	233	95.1%
Do you belong to the upper third?	Yes	67	27.3%
	No	64	26.1%
	Don't know	114	46.5%
Are you a member of any research groups?	Yes	20	8.2%
	No	225	91.8%

Source: Instrument Application

Of the 100% of students who belonged to a research group (n=20), 35% (n=7) belonged to a group external to the university institution of study and 65% (n=13) were members of an internal group existing in the university.



**Figure 1: Level of research skills in nursing students (N=245)**

Figure 1 illustrates the level of research competencies among nursing students (n=245). The data reveals that 40% (n=98) exhibit a low level of competencies, 39.2% (n=96) demonstrate a medium level, and 20.8% (n=51) of nursing students possess a high level of research competencies.

**Table 4: Relationship between Factors Associated with the Level of Research Skills in Nursing Students (n=45)**

Associated Factor		Level of Investigative Competencies						Chi Square
		Low Level		Intermediate Level		High Level		P-value
		n	%	n	%	n	%	
Age range	18 to less than 29 years old	56	22.9%	56	22.9%	25	10.2%	0.231
	29 to less than 40 years	26	10.6%	28	11.4%	22	9.0%	
	more than 40 years	16	6.5%	12	4.9%	4	1.6%	
Sex	Male	48	19.6%	22	9.0%	16	6.5%	0.322
	Female	50	20.4%	74	30.2%	35	14.3%	
What cycle does it belong to?	7 <sup>th</sup> cycle	15	6.1%	25	10.2%	12	4.9%	0.204
	8 <sup>th</sup> cycle	52	21.2%	29	11.8%	13	5.3%	
	9 <sup>th</sup> cycle	15	6.1%	23	9.4%	14	5.7%	
	10 <sup>th</sup> cycle	16	6.5%	19	7.8%	12	4.9%	
Have you received motivation from any teacher to do research work?	No	48	19.6%	77	31.4%	42	17.1%	0.000*
	Yes	50	20.4%	19	7.8%	9	3.7%	



Are you interested or interested in research?	No	61	24.9%	76	31.0%	44	18.0%	0.002*
	Yes	37	15.1%	20	8.2%	7	2.9%	
Have you failed a Research course at least once?	Yes	34	13.9%	18	7.3%	6	2.4%	0.255
	No	64	26.1%	78	31.8%	45	18.4%	
Do you belong to any research group?	Yes	12	4.9%	18	7.3%	5	2.0%	0.003*
	No	86	35.1%	78	31.8%	46	18.8%	
Have you entered any research competitions?	Yes	12	4.9%	13	5.3%	3	1.2%	0.361
	No	86	35.1%	83	33.9%	48	19.6%	
Have you studied any research courses outside of your university curriculum?	Yes	15	6.1%	14	5.7%	13	5.3%	0.014*
	No	83	33.9%	82	33.5%	38	15.5%	
Have you published any articles?	Yes	4	1.6%	7	2.9%	1	0.4%	0.000*
	No	94	38.4%	89	36.3%	50	20.4%	
Do you belong to the upper third?	Yes	32	13.1%	8	3.3%	27	11.0%	0.253
	No	33	13.5%	27	11.0%	4	1.6%	
	Don't know	33	13.5%	61	24.9%	20	8.2%	
Are you a member of any research groups?	Yes	7	2.9%	11	4.5%	2	0.8%	0.000*
	No	91	37.1%	85	34.7%	49	20.0%	

Source: Instrument Application, \*The chi-square statistics are significant at the 0.05 level.

According to Table 4, the factors statistically associated with the level of research competencies among nursing students were: having an interest or attraction towards research, belonging to a research group, having taken a research course outside the university curriculum, having published articles, receiving encouragement from a lecturer to undertake research projects, and participating in a research incubator group ( $p < 0.05$ ). No significant association was found with sociodemographic factors or the academic semester ( $p > 0.05$ ).

## DISCUSSION

Of the 100% (N=245), the largest proportion was between 18 to less than 29 years old, the female sex predominated, which is characteristic of the nursing program. Likewise, the eighth semester had a greater number of participants because it had a higher number of enrolled students. It is necessary to mention that in the study population, students take the Research Methodology subject in the 7th semester, after which they delve deeper into research subjects (Table 2).

According to the associated factors (Table 3), 68.2% of nursing students reported having received motivation from a teacher, 73.9% do not feel interest or attraction about research, 23.7% have failed a research course, 85.7% do not belong to a research group, 88.6% have not participated in a research contest, 82.9% have not studied a research course outside their university curriculum, 95.1% have not published articles, 27.3% are within the top third and only 8.2% are members of a research group, these results were convergent with the results obtained in the study by Castro (2021), who determined the associated factors in dentistry students, despite the fact that the male sex predominated (54.6%) the average age was 23.45, 89.3% did not belong to a research group, 81.5% did not belong to any research group, 87.8% did not publish articles, 78.5% did not

participate in research competitions; this study was carried out in a Peruvian university, which shows that in Peru there are deficiencies in university resources that could be associated with the level of research skills in university students.

Regarding the level of research skills (Figure 1), the low level predominated (40%), having similarity with the medium level (39.2%) and only 20.8% obtained a high level. The production of nursing research in low- and middle-income countries like Nigeria is limited. A previous study aimed to assess nursing students' knowledge and perceptions of research in Nigeria, as well as identify factors affecting their perceptions and strategies to improve them. Forty-two percent had low levels of research knowledge, while 60% had a positive perception. The author recommends proper teaching of research methodology for better understanding, adequate training before conducting research, and providing access to journals and funding for research activities (Awoniyi *et al.*, 2023).

A study conducted in Serbia aimed to explore nurses' knowledge and attitudes towards clinical research, as well as their opinions and self-assessment of clinical research nursing and the factors influencing them. The majority of respondents displayed a low level of knowledge but held a positive attitude towards clinical research. Nurses involved in clinical research were confident in their competencies, according to their self-assessment (Stoisavljević *et al.*, 2023).

The factors that were significantly associated with the level of research skills in nursing students were having received motivation from a teacher, interest in research, belonging to a group or group, studying a research course outside their curricular mesh and publishing articles (Sig. <0.05), these results were similar to the results obtained in the study of Castro (2021), where it is evident that belonging to a group, group, publishing articles was statistically associated with the level of research skills (Sig. <0.05), this means that if a nursing student meets these factors, their level of research skills is higher, according to Table 4, it is evident that the highest proportion of students do not meet these factors reflected in their low level of research skills.

### **Limitation**

It is important to mention that tenth semester students took some research subjects in a virtual environment, which could have influenced the level of research skills. In addition, the main limitation of the study was trying to reach the total population because ninth and tenth semester students only attend the university once a week in person, which delayed the data collection of the study.

### **CONCLUSION**

The majority of the students in the study were between 18 and 28 years old, most of them were female and in the eighth semester. Although most of the students received motivation from a teacher to carry out research work, the majority of them had no interest in research, did not belong to a research group or group, and had not published research articles. Most students have a low level of research skills, the level of these skills was significantly associated with motivation, being a member of a group or group, interest, taking extracurricular research subjects and the publication of articles. The future scope of this study on research competencies in nursing students focuses on identifying and strengthening key areas of research training. It aims to expand the research to different educational institutions and cultural contexts, exploring how research competencies vary depending on factors such as the academic environment, available resources, and curricular practices. Furthermore, the study will assess the effectiveness of formative interventions designed to improve these competencies, with a particular focus on integrating research into clinical practice. Finally, it intends to investigate the influence of research competencies on the quality of patient care and the professional development of future nurses, thereby contributing to the evolution of evidence-based nursing.

### **Recommendation**

Nursing schools are encouraged to develop research courses from the first academic semesters, and to encourage students to publish articles in conjunction with their respective health research centers. Likewise, it is recommended to regulate the development of research groups in the university community, and nursing students are encouraged to strengthen their research studies through extracurricular courses, since these are



factors that improve research skills in nursing students.

### Conflict of Interest

The authors declare that they have no competing interests.

### ACKNOWLEDGEMENT

The authors express their gratitude to the Research Directorate for its financial support, provided through the coordination of the e-Health Research Center, which facilitates research at the University of Sciences and Humanities (UCH), Peru.

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