



ORIGINAL

Nursing students' perceptions of clinical clerkship

Percepción de los estudiantes de enfermería sobre las prácticas clínicas

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ABSTRACT

Introduction: clinical clerkship are a critical element because they provide students with the opportunity to practice what they have learned, so it is important that they view these formative experiences positively.

Objective: to evaluate the perception of clinical clerkship of third year students of the bachelor's degree in nursing at a public higher education institution in the province of Tucumán, in the second quarter of 2023.

Methods: descriptive, cross-sectional, and quantitative study. The instrument to measure the students' perception of Matheus' clinical clerkship, composed of 24 items, was used. Informed consent was obtained.

Results: 124 students, mostly female (88,71 %) and aged between 20 and 29 years (57,26 %) were interviewed. Of the respondents, 56,45 % rated the teaching performance as positive and 10,48 % rated the teaching-learning process as negative. The overall perception of the clerkship was positive in 51,61 % of the students.

Conclusion: perceptions of the clinical clerkship were mostly favorable, and teaching performance was the most highly rated aspect. Older students had a better perception of the clinical clerkship.

Key Words: Nursing Students; Perception; Clinical Clerkship.

RESUMEN

Introducción: las prácticas clínicas comprenden un elemento crucial dado que brinda al estudiante la posibilidad de poner en práctica lo aprendido, por lo cual es importante que estos perciban de manera positiva estas instancias formativas.

Objetivo: evaluar la percepción de las prácticas clínicas de los estudiantes de tercer año de la carrera de Licenciatura en Enfermería de una institución de educación superior de carácter público de la provincia de Tucumán en el segundo cuatrimestre de 2023.

Metodología: estudio descriptivo, transversal y cuantitativo. Se utilizó el instrumento para medir la percepción de los estudiantes sobre las prácticas clínicas de Matheus compuesto por 24 ítems. Se implementó el consentimiento informado.

Resultados: se encuestó a 124 estudiantes, mayormente mujeres (88,71 %) y con edades entre los 20 y 29 años (57,26 %). El 56,45 % de los encuestados evaluaron favorablemente el Desempeño docente y el 10,48 % evaluó como desfavorable el Proceso de Enseñanza-Aprendizaje. La percepción global de las prácticas fue favorable en el 51,61 % de los estudiantes.

Conclusión: la percepción de las prácticas clínicas fue categorizada mayormente como favorable y el Desempeño docente fue el aspecto mejor valorado. Los estudiantes de mayor edad tuvieron mejor percepción de la práctica clínica.

Palabras clave: Estudiantes de Enfermería; Percepción; Prácticas Clínicas.

INTRODUCTION

In the course of their education, nursing students are required to gain the knowledge, skills, and attitudes necessary for delivering quality and safe care, facilitating a successful entry into the workforce.^(1,2) This involves applying what they've learned in their practical experiences, translating acquired knowledge from their curriculum into real-world situations.^(3,4)

Clinical clerkships constitute a vital role as they provide students with the opportunity to put into practice what they have learned. Additionally, practices offer experiences not only related to the development of techniques but also encompass attitudes integral to professional practice.⁽⁵⁾ In this context, students take an active role in the teaching-learning process, requiring them to perceive these practices as valuable and satisfying. The role of the teacher involves planning instances that allow for the application and integration of knowledge in a controlled and supportive environment.⁽⁶⁾

It is common for students to feel high levels of stress and anxiety during clinical clerkships, often linked to their interactions with the healthcare team, the teacher evaluation process, relationships with peers, and limited familiarity with technology and hospital resources.^(7,8) A negative perception of clinical clerkships may adversely affect students' active participation in learning experiences, thereby impeding the acquisition of competencies crucial for their future professional endeavors.^(9,10,11)

Research, such as the work of Hernández Ortega *et al.*,⁽¹²⁾ has indicated that nursing students frequently suffer from high levels of stress and anxiety during clinical clerkships. In a different study, Sahin-Karaduman *et al.*,⁽¹³⁾ observed a positive perception regarding teacher supervision and identified a correlation between mental health and different dimensions of perception: clinical learning environment, supervision, and nursing instructor. It is essential to conduct studies aimed at understanding students' perceptions of their practical experiences. By gaining insights from their perspective, it becomes possible to identify elements that either positively or negatively impact their experiences. This understanding is vital for designing and implementing intervention strategies to foster a high-quality practice that meets students' needs.⁽¹⁴⁾

Based on the preceding context, this study was undertaken to evaluate how third-year students in the Bachelor of Science in Nursing (BSN) degree program at a public higher education institution in the province of Tucumán perceived their clinical clerkships during the second term of 2023.

METHODS

Descriptive study with a quantitative and cross-sectional approach. The study universe consisted of third-year students in the Bachelor of Science in Nursing (BSN) degree program at a public higher education institution in San Miguel de Tucumán, province of Tucumán, Argentina. The sample comprised 124 students, representing 100 % of the third-year students who attended courses during the second term of 2023.

Participation in the study involved students enrolled in the Bachelor of Science in Nursing degree program at the main campus of the institution, actively undertaking their clinical clerkships and voluntarily consenting to be part of the research.

The instrument designed by Matheus was used to measure students' perception of clinical clerkships.⁽¹⁵⁾ This tool comprises 24 items rated on a Likert Scale using three adjectives: "always", "sometimes", and "never". The items are organized into three dimensions: Environment (items 1-6), Teaching Performance (items 7-15), and Teaching-Learning Process (items 16-24). The instrument underwent a Cronbach's alpha assessment, resulting in a value of 0,90, indicating high reliability.

The Environment dimension evaluates healthcare staff's attitude and cooperation, service organization, resource availability, environmental conditions in services, and the relationship between healthcare personnel and students. The Teaching Performance dimension evaluates teaching objectives, communication, respect, trust, empathy, support, motivation, and the addressing of student doubts and resolution of obstacles during clinical clerkships. Finally, the Teaching-Learning Process dimension pertains to the connection between theory and practice, the acquisition of skills and competencies, the allotted time for practical experience, guidance and motivation, and the opportunities presented within the context of clinical clerkships.

The instrument analysis involved summing up the items according to the instrument's instructions. Students' perceptions of clinical clerkships were categorized as "Favorable" for scores between 56 and 72, "Moderately Favorable" for scores between 40 and 55, and "Unfavorable" for scores between 24 and 39.

For data collection, the instrument was administered to the students after obtaining informed consent, using Google Forms. Following data collection, the information was exported into a Microsoft Excel database and analyzed using Infostat free version from the Universidad Nacional de Córdoba. The U-Mann Whitney and Kruskal-Wallis tests were used to compare means between 2 and 3 or more groups. A significance level of $p < 0,05$ was established.

In terms of ethical considerations, the study received institutional approval for its implementation. Written informed consent was used, and data collection was kept anonymous, ensuring that no personally identifiable information was collected that could link the completed instrument to the participants. National

and international laws governing the protection of research subjects were duly observed. The current study was deemed low-risk, given its observational, anonymous nature, and the absence of sensitive data collection.⁽¹⁶⁾

RESULTS

A total of 124 third-year students in the Bachelor of Science in Nursing (BSN) degree program who undertook professional practices in the second term of 2023 were surveyed. The majority of these students were female (88,71 %), and their ages ranged between 20 and 29 years (57,26 %) (Table 1).

Variable	Categories	n	%
Age group	20-29 years	71	57,26
	30-39 years	35	28,23
	40-49 years	12	9,68
	50 or older	6	4,84
Sex	Man	14	11,29
	Woman	110	88,71
Total		124	100,00

When analyzing students' perception of the Environment dimension, it was observed that item 5, "The practice development unit is maintained in a clean and organized manner," received the highest rating from 65,32 % of respondents. Conversely, item 4, "Adequate resources are available for the execution of clinical clerkships," was the least positively perceived, with only 6,45 % of participants assigning it to the lowest evaluation category. The complete data is presented in table 2.

Variable	Never		Sometimes		Always	
	n	%	n	%	n	%
1 The healthcare staff at the hospital has been friendly towards you during clinical clerkships.	3	2,42	74	59,68	47	37,90
2. The healthcare personnel collaborates with the students during the practice sessions.	4	3,23	94	75,81	26	20,97
3. The organization of the clinical unit where you attend practices facilitates the development of the practices.	3	2,42	66	53,23	55	44,35
4. Adequate resources are available for the execution of clinical clerkships.	8	6,45	92	74,19	24	19,35
5. The practice development unit is maintained in a clean and orderly manner.	2	1,61	41	33,06	81	65,32
6. There is a good relationship between healthcare staff and students in the development of the practices.	4	3,23	91	73,39	29	23,39

In examining students' perception of the Teaching Performance dimension, it was revealed that item 7, "Demonstrates expertise in the subject he/she is responsible for," received the highest rating from 76,61 % of respondents. On the other hand, items 13, "Motivates students to take independent actions with appropriate supervision," and 15, "Contributes to finding solutions to situations that limit or hinder learning," were the least positively perceived, with only 6,45 % of participants assigning them to the lowest evaluation category. The complete data is presented in table 3.

In examining students' perception of the Teaching-Learning Process dimension, it was noted that item 18, "Engaging in practical activities contributes to acquiring skills and enhancing your learning," received the highest rating from 71,77 % of respondents. Conversely, item 20, "When you make a mistake in practice, you receive words of encouragement and motivation from the teacher to try again," was the least positively perceived, with 59,68 % of participants assigning it to the lowest evaluation category. The complete data is presented in table 4.

Table 3. Perception of the Teaching Performance dimension

Variable	Never		Sometimes		Always	
	n	%	n	%	n	%
7. Demonstrates expertise in the subject he/she is responsible for.	0	0,00	29	23,39	95	76,61
8. Defines the objectives/competencies of the practice and directs students towards their accomplishment.	3	2,42	45	36,29	76	61,29
9. Establishes effective communication when expressing themselves and asking questions.	4	3,23	56	45,16	64	51,61
10. Demonstrates respect and equality in the treatment of students.	6	4,84	60	48,39	58	46,77
11. Inspires confidence and is open to listening to students when they have questions or face challenges during practice.	4	3,23	57	45,97	63	50,81
12. Offers prompt support when challenges arise during the practice rotation.	3	2,42	61	49,19	60	48,39
13. Motivates students to take independent actions with appropriate supervision.	8	6,45	47	37,90	69	55,65
14. Demonstrates empathy.	4	3,23	75	60,48	45	36,29
15. Contributes to finding solutions to situations that limit or hinder learning.	8	6,45	60	48,39	56	45,16

Table 4. Perception of the Teaching-Learning Process dimension

Variable	Never		Sometimes		Always	
	n	%	n	%	n	%
16. Do you feel that you have received the necessary academic preparation to handle challenging situations during your practices?	14	11,29	83	66,94	27	21,77
17. There is consistency between the theory presented and the practical activities carried out.	10	8,06	83	66,94	31	25,00
18. Engaging in practical activities contributes to acquiring skills and enhancing your learning.	2	1,61	33	26,61	89	71,77
19. You consider you are provided with adequate opportunities to develop skills and acquire further knowledge during practices.	23	18,55	59	47,58	42	33,87
20. When you make a mistake in practice, you receive words of encouragement and motivation from the teacher to try again.	74	59,68	40	32,26	10	8,06
21. The time allocated for learning in clinical clerkships is adequate for acquiring skills.	2	1,61	39	31,45	83	66,94
22. While performing your activities in practice, you receive previous guidance from the teacher.	7	5,65	60	48,39	57	45,97
23. In clinical clerkships, feedback is provided on topics of interest to the student.	34	27,42	59	47,58	31	25,00
24. The theoretical activities emotionally prepare you for the development of practical experiences.	12	9,68	80	64,52	32	25,81

When investigating students' views on clinical clerkships, it was found that Teaching Performance was the most positively assessed dimension, with 56,45 % of respondents expressing a favorable perception. On the other hand, the Teaching-Learning Process dimension received the lowest evaluation, with 10,48 % of the sample expressing an unfavorable perception. Overall perception of clinical clerkships was considered favorable by 51,61 % of respondents (Figura 1).

Finally, in the inferential analysis, no association was found between gender and students' perceptions of clinical clerkships. It was found that students older than 50 years had a better assessment of clinical clerkships in the dimensions of Teaching Performance ($p:0,022$) and Overall Perception ($p:0,016$).

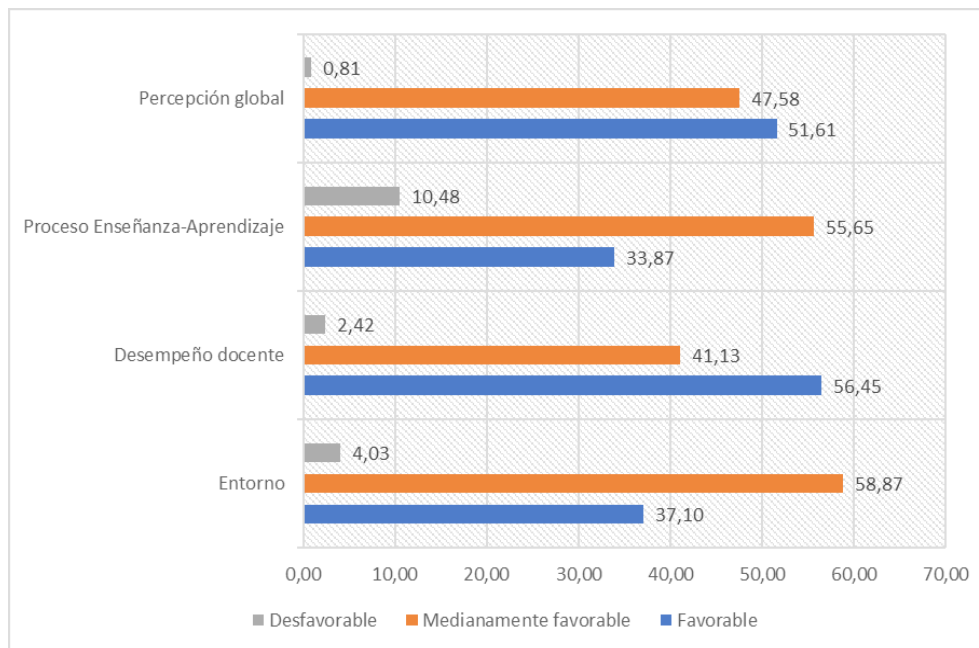


Figura 1. Students' perceptions of clinical clerkships

DISCUSSION

This work provides valuable information about students' perceptions of clinical clerkships. This can be used to plan learning activities and address elements that are amenable to intervention to improve the learning experience, taking into account the influence of the learning experience on participation and the development of patient care competencies.

In our study we found high satisfaction with teaching performance and the hospital environment. This contrasts with studies such as that by Moreno-Tello *et al.*,⁽¹⁷⁾ who found partial satisfaction with tutors and teachers, considering that they were not in line with the objectives of the curriculum. Furthermore, they require a high number of learning products in the time available to them in the health institutions. This aspect could be associated with the fact that our students are not asked to document the nursing process during their practical experience. This gives them additional time to focus on assessment and intervention activities. Additionally, our findings correspond with those reported by Cortés-Escalante & Julio-Peterson⁽¹⁸⁾ and Bustamante-Sánchez.⁽¹⁹⁾ They observed that students provided positive evaluations of clinical clerkships, indicating a well-rounded integration of theoretical and practical elements within the educational context.

The work of Sahin-Karaduman *et al.*,⁽¹¹⁾ describes similar findings to our study, with positive perceptions of Teacher Performance and the Learning Environment. Consideration of this aspect is essential when evaluating students' perception and satisfaction with the various dimensions of clinical clerkships, as it significantly impacts the health and well-being of students⁽²⁰⁾ and the development of expected clinical skills during their formative stage.^(21,22) This is particularly relevant because the connection between teaching performance (didactic ability and communication) directly influences the achievement of clinical competencies in nursing students.⁽²³⁾

The Teaching-Learning Process, as described in studies like Bustamante-Sánchez,⁽¹⁹⁾ received positive evaluations with only a 3,4 % unfavorable perception. This differs from our findings where ten percent of the surveyed individuals perceived it negatively. However, our findings correspond with those documented by Álvarez Chávez *et al.*,⁽²⁴⁾ where 13 % assess the teacher's performance as deficient. This aspect could be linked to variables such as teaching qualifications and experience, along with institutional characteristics and the students' individual attributes.

In terms of gender, reports have varied, with some suggesting a better perception among women⁽²⁵⁾ and others among men.⁽¹¹⁾ This finding might be associated with the predominant presence of women in nursing education and challenges faced by male personnel in specific areas like obstetrics and gynecology, as documented in several studies.⁽²⁶⁾ Moreover, a higher perception of stress during clinical clerkships has been noted in younger students,^(27,28) potentially explaining why older students tend to have a more positive perception of hospital practice.

The study's limitations include the fact that it was conducted in a single public institution with students exclusively from one campus. Furthermore, the unique characteristics of nursing students in the region could influence the comparability of the results. Future studies are suggested to evaluate variables that could influence the acquisition of competencies, including academic stress.^(29,30)

CONCLUSION

The perception of clinical clerkships was considered favorable by 50 % of the respondents, and fewer than 1 % rated it as unfavorable. The dimension of Teaching Performance received the highest score, whereas the Teaching-Learning Process was perceived the least favorably. A correlation was observed between age and the perception of clinical clerkships, indicating a more positive evaluation among students aged 50 and above.

REFERENCES

1. Lepez CO, Eiguchi K. Labor market insertion, management and training by competencies: a current view in the Argentine context. *Data and Metadata*. 2022;1:29. <https://doi.org/10.56294/dm202267>
2. Lepez CO, Eiguchi K. Managerial vision of the professional competencies of nursing graduates and their relationship with job placement. *Data and Metadata*. 2022;1:28. <https://doi.org/10.56294/dm202266>
3. Alvarez LM. Influencia del entorno de práctica de enfermería en el desempeño laboral. *Salud, Ciencia y Tecnología*. 2022;2:63. <https://doi.org/10.56294/saludcyt202263>
4. García-Carpintero Blas E, Siles-González J, Martínez-Roche ME, Martínez-Miguel E, Manso-Perea C, González-Cervantes S, García-García E. Percepciones de los estudiantes sobre sus vivencias en las prácticas clínicas. *Enferm univ*. 2019;16(3):259-268. Disponible en: <https://doi.org/10.22201/eneo.23958421e.2019.3.712>.
5. Ríos NB, Mosca AM. Educación continua en el contexto actual, enfoque desde la enfermería. *Salud, Ciencia y Tecnología*. 2021;1:29. <https://doi.org/10.56294/saludcyt202129>
6. Tumiri T, Duran L, Lin J, Ríos NB, Mosca A, Gómez T. Image in nursing and simulation. *Metaverse Basic and Applied Research*. 2023;2:36. <https://doi.org/10.56294/mr202336>
7. Alzayyat A, Al-Gamal E. A review of the literature regarding stress among nursing students during their clinical education. *International Nursing Review*. 2014;61(3):406-415. <https://doi.org/10.1111/inr.12114>
8. Onieva-Zafra MD, Fernández-Muñoz JJ, Fernández-Martínez E, García-Sánchez FJ, Abreu-Sánchez A, Parra-Fernández ML. Anxiety, perceived stress and coping strategies in nursing students: a cross-sectional, correlational, descriptive study. *BMC Med Educ*. 2020;20:370. <https://doi.org/10.1186/s12909-020-02294-z>
9. Canova-Barrios CJ, Méndez PG, Sosa LR, Flores MA, Rodríguez MA, Hernández SS. Percepción y satisfacción de estudiantes de Enfermería con la educación virtual en época de COVID-19. *Enfermería (Montevideo)*. 2023;12(2):e3304. <https://doi.org/10.22235/ech.v12i2.3304>.
10. Villarroel Lanas C. Intervenciones por estudiantes de Enfermería en el proceso de vacunación extramural desarrolladas en el CESFAM Féliz de Amesti, Macul. *Rev Chil Enferm*. 2022;3(2):114-132. <https://doi.org/10.5354/2452-5839.2021.64637>
11. Veloz Montano M. Mejorando la Práctica Pedagógica: Una Revisión de los Procesos Educativos. *Seminars in Medical Writing and Education*. 2023;2:29. <https://doi.org/10.56294/mw202329>
12. Hernández Ortega R, González Pascual JL, Fernández Araque AM. Estrés y ansiedad al comienzo de las prácticas clínicas en estudiantes de Enfermería. *Metas de Enfermería*. 2020;23(6):50-58.
13. Sahin-Karaduman G, Kubat-Bakır G, Sim-Sim MMSF, Basak T, Goktas S, Skarbaliene A, et al. Nursing students' perceptions on clinical learning environment and mental health: a multicenter study. *Rev. Latino-Am. Enfermagem*. 2022;30:e3528. <https://doi.org/10.1590/1518-8345.5577.3528>
14. Rodríguez-García MC. Percepción de los estudiantes del Grado en Enfermería sobre su entorno de prácticas clínicas: un estudio fenomenológico. *Enfermería Clínica*. 2019;29(5):264-270. <https://doi.org/10.1016/j.enfcli.2018.10.004>
15. Matheus R. Percepción de los Estudiantes del Cuarto Semestre del Programa de Enfermería de la Universidad Centro occidental Lisandro Alvarado, acerca de las prácticas Clínicas en Enfermería Pediátrico. Barquisimient, Venezuela; 2009. <http://bibmed.ucla.edu.ve/DB/bmucla/edocs/textocompleto/TWY85DV4M382009.pdf>

16. Canova Barrios CJ. Aspectos éticos en la publicación de manuscritos científicos: Una revisión de literatura. *Salud, Ciencia y Tecnología*. 2022;2:81. <https://doi.org/10.56294/saludcyt202281>
17. Moreno Tello MA, Prado EN, García Avendaño DJ. Percepción de los estudiantes de enfermería sobre el ambiente de aprendizaje durante sus prácticas clínicas. *Revista Cuidarte*. 2013;4(1):444-449. <https://www.redalyc.org/articulo.oa?id=359533224003>
18. Cortes-Escalante F, Julio-Peterson A. Percepción de los estudiantes de Enfermería sobre la calidad de las prácticas formativas. *Identidad Bolivariana*. 2020;4(2):1-10.
19. Bustamante Sánchez L. Percepción del estudiante de Enfermería sobre las Prácticas Clínicas, Universidad Nacional Toribio Rodríguez de Mendoza, Chachapoyas - 2013. Universidad Nacional Toribio Rodríguez de Mendoza de Amazonas, 2014. <https://hdl.handle.net/20.500.14077/1115>
20. Canova-Barrios C, Almeida JA, Condori Aracayo ER, Mansilla MA, Garis DN. Calidad de vida relacionada con la salud en estudiantes de tecnicatura en enfermería. *Rev Chil Enferm*. 2023;5(2). <https://doi.org/10.5354/2452-5839.2023.72003>
21. McCloughen A, Levy D, Johnson A, Nguyen H, McKenzie H. Nursing students' socialisation to emotion management during early clinical placement experiences: A qualitative study. *J Clin Nurs*. 2020;29(13-14):2508-20. doi: <http://doi.org/10.1111/jocn.15270>
22. Flores Vizcaya Moreno M, Pérez-Cañaveras RM, Jiménez-Ruiz I, de Juan J. Percepción de los estudiantes de enfermería sobre la supervisión y entorno de aprendizaje clínico: un estudio de investigación fenomenológico. *Enferm glob*. 2018;17(51):306-331. <https://doi.org/10.6018/eglobal.17.3.276101>
23. García-Caldas DA. Capacidad didáctica del docente y logro de competencias durante sus prácticas clínicas en el interno de enfermería del hospital de emergencias Grau Essalud, 2019. *Rev Fac Med Hum*. 2021;21(2):378-386. <http://doi.org/10.25176/rfmh.v21i2.3719>
24. Álvarez Chávez A, Arias Rico J, Sánchez Padilla ML, Jiménez Sánchez RC. Percepción de estudiantes de licenciatura en enfermería sobre el desempeño del profesor de práctica clínica. *Educación y Salud Boletín Científico Instituto De Ciencias De La Salud Universidad Autónoma Del Estado De Hidalgo*. 2017;6(11). <https://doi.org/10.29057/icsa.v6i11.2720>
25. Tessa Giménez R, Silvera S. Percepción de los estudiantes de enfermería sobre las dificultades en su inserción a la práctica clínica de paciente crítico. *Enfermeria (Montev.)*. 2015;3(2):34-40. <https://doi.org/10.22235/ech.v3i2.592>
26. Hosseini FA, Parvan K, Shaygan M, Thomson B. Male Nursing Students' Perception of Gender Barriers in Nursing Curricula in an Iranian University of Medical Sciences. *Invest Educ Enferm*. 2022;40(1):e03. <https://doi.org/10.17533/udea.iee.v40n1e03>
27. López-Medina I, Sánchez-Criado V. Percepción del estrés en estudiantes de enfermería en las prácticas clínicas. *Enferm Clin*. 2005;15(6):307-313. [https://doi.org/10.1016/S1130-8621\(05\)71136-0](https://doi.org/10.1016/S1130-8621(05)71136-0)
28. Moya Nicolás M, Larrosa Sánchez S, López Marín C, López Rodríguez I, Morales Ruiz L, Simón Gómez Á. Percepción del estrés en los estudiantes de enfermería ante sus prácticas clínicas. *Enferm glob*. 2013;12(31):232-253. https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1695-61412013000300014
29. Canova-Barrios CJ, Acosta-Salazar DP, Torres-Barrios LA, Álvarez-Miño L. Variables que influyen el desempeño de los estudiantes de enfermería de la Universidad del Magdalena en las pruebas SABER PRO. *Enfermeria (Montev.)*. 2023;12(2):e3370. <https://doi.org/10.22235/ech.v12i2.3370>
30. Ortigoza A. Determinantes del rendimiento académico de alumnos de la Carrera Licenciatura en Enfermería de la Universidad Nacional de Tucumán en el período 2003-2011. *Revista de Educación*. 2022;0(26):301-313. https://fh.mdp.edu.ar/revistas/index.php/r_educ/article/view/6128

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CONFLICT OF INTEREST

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