

Analysis of nursing programme completion rates in a southwestern Colombian university

Análisis de las tasas de culminación del programa de enfermería en una universidad del suroccidente colombiano

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Abstract

The aim of this research was to determine the graduation rate of a nursing programme and to explore the factors that contribute to or hinder the successful completion of the programme. The research adopted a descriptive approach, using a sample of students enrolled in and graduating from a nursing programme at a university in the southwestern region of Colombia, from 2012 to 2021. Data for the study were obtained from the university's academic records, meticulously organised and analysed using Microsoft Excel® spreadsheets. The analytical process involved extensive descriptive statistical analysis, including frequency tables, indices and proportions. The ethical considerations of the study were duly addressed, with formal approval from the Ethics Committee of the Faculty of Health, as documented in Law No. 05 of 22 April 2022. The cumulative graduation rate for the nursing programme for the period 2017 to 2021 was 37.9%. In addition, the study provided insights into the graduation rates for specific cohorts, with the following findings: for the cohort from 2012 to 2017, the rate was 18.2%; for the cohort from 2013 to 2018, the rate reached 32.3%; the cohort from 2014 to 2019 recorded a rate of 37.1%; similarly, the cohort from 2015 to 2020 recorded a rate of 40.5%, while the most recent cohort from 2016 to 2021 achieved a rate of 43.3%. Further examination of the data revealed that certain academic and socio-economic-personal factors significantly influenced successful completion of the programme. These included a strong affinity with the programme's "vocation of service to humanity" and crucial family support in a spiritual context. Looking at the cumulative and cohort-specific completion rates, it became clear that the attrition rate, which includes students who either partially or completely withdrew from the programme during their studies, was over 50%.

Resumen

El objetivo de esta investigación fue determinar la tasa de graduación de un programa de enfermería y explorar los factores que contribuyen o dificultan la finalización exitosa del programa. La investigación adoptó un enfoque descriptivo, utilizando una muestra de estudiantes matriculados y graduados de un programa de enfermería en una universidad de la región suroccidental de Colombia, entre 2012 y 2021. Los datos para el estudio se obtuvieron de los registros académicos de la universidad, se organizaron meticulosamente y se analizaron utilizando hojas de cálculo de Microsoft Excel®. El proceso analítico implicó un extenso análisis estadístico descriptivo, incluyendo tablas de frecuencia, índices y proporciones. Las consideraciones éticas del estudio fueron debidamente atendidas, con la aprobación formal del Comité de Ética de la Facultad de Salud, conforme documentado en el acta No. 05 del 22 de abril de 2022. La tasa de graduación acumulada para el programa de enfermería para el período 2017 a 2021 fue del 37.9%. Además, el estudio proporcionó información sobre las tasas de graduación para cohortes específicas, con los siguientes hallazgos: para la cohorte de 2012 a 2017, la tasa fue del 18.2%; para la cohorte de 2013 a 2018, la tasa alcanzó el 32.3%; la cohorte de 2014 a 2019 registró una tasa del 37.1%; de manera similar, la cohorte de 2015 a 2020 registró una tasa del 40.5%, mientras que la cohorte más reciente de 2016 a 2021 alcanzó una tasa del 43.3%. Un examen más detallado de los datos reveló que ciertos factores académicos y socioeconómicos-personales influyeron significativamente en la finalización con éxito del programa. Entre ellos, una fuerte afinidad con la "vocación de servicio a la humanidad" del programa y un apoyo familiar crucial en un contexto espiritual. Si se observan los índices de finalización acumulados y específicos de cada cohorte, queda claro que el índice de abandono, que incluye a los estudiantes que abandonaron parcial o totalmente el programa durante sus estudios, fue superior al 50%.



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Introduction

Currently, there is a chronic shortage of nursing staff, which, combined with the progressive ageing of the population, is a time bomb for health systems. It is therefore necessary to redistribute financial resources not only to the social services for the elderly, but also to the higher education institutions that train qualified personnel, in order to maintain and increase the graduation rate in nursing schools [1].

On the other hand, the economic, family and emotional costs of dropping out and/or prolonging one's studies lead to costs that are not visible to society, and although the graduation rate is an indicator of interest, few publications report this data; OECD (Organisation for Economic Co-operation and Development) member countries report values between 60 and 70% [2]. It is important for nursing to study this phenomenon because it provides a clear idea of the effectiveness of government, industry and educational interventions to recruit, retain and avoid attrition, as well as to guarantee the time students need to complete their degree [1].

Two methods have been described in the literature to operationalise the graduation rate: the first, the simplest, is to divide the number of graduates by the number of students enrolled in a given year, multiplied by 100; this value is understood as the percentage of students who graduate from the institution regardless of the time. The other method is more complex and is perhaps the most recommended, since it takes into account the time required for the student to graduate according to the academic programme chosen. The latter starts with a specific cohort and follows it over time until the moment of graduation, taking into account the prescribed or legal duration of the programme for the university (the calculation method used in this study). Taking into account both methods of measurement, the percentages reported in the literature do not have the same meaning; in addition to the limited availability of data on enrolled students and graduates in universities, the process of researching this phenomenon and disseminating knowledge is hampered by aspects of content and form [1-8].

In view of the above, the present study seeks to determine the graduation rate and the aspects that facilitated or hindered the completion of the nursing programme within 5 years from the first enrolment in a university in the southwest of Colombia, cohorts enrolled between 2012 and 2016.

Methods

Research design

This research is quantitative, cross-sectional and descriptive in nature. The focus of the study is on nursing education in the context of South West Colombia. The sample for this research was carefully selected to include both current students and graduates of a nursing programme. The time frame covers the years 2012 to 2021, providing a comprehensive view of the evolution of nursing education.

Participants and criteria

Participation in the study was based on a set of strict inclusion criteria. Specifically, individuals were considered eligible if they were financially and academically enrolled in the first semester of their nursing program between 2012 and 2016, thus providing a lens into the formative stages of nursing education. In addition, the sample included individuals who successfully completed their nursing program between 2017 and 2021, effectively engaging in a higher education journey that began five years earlier.

Exclusion parameters

Participants from other nursing programs in different institutions during the period 2012-2021 were intentionally excluded, ensuring a focused and coherent lens on the specific nursing program under study. This measured approach was taken to emphasise the uniqueness of the scope of the study and to ensure the applicability of the findings within the context of the targeted nursing program in southwest Colombia.

Study variables

The focal points of the study encompassed a comprehensive set of variables, each meticulously framed to capture the nuanced landscape of nursing education dynamics.

Total graduation rate (2017-2021)

This key metric quantified the success trajectory of the nursing programme over a specified five-year period, from 2017 to 2021. It was a numeric articulation, expressed as a percentage, that captured the ratio of the total number of students who began

their nursing education five years earlier (from 2017 to 2021) to the total number of graduates from the same nursing program during that period. This numerical articulation was then multiplied by 100 to provide a comprehensive assessment of the programme's overall graduation effectiveness within this time window.

Cohort-specific graduation rate (2012-2016)

Within the broader tapestry of the study, a particular lens was focused on the graduation rates per academic semester within the 2012-2016 cohort. This granular perspective involved a precise numerical articulation, expressed as a percentage, that skilfully captured the interplay between the number of students who were financially and academically engaged in the first semester of the nursing programme for each academic semester, and the corresponding number of students who successfully completed their higher education journey five years earlier, per academic semester. This numerical composition was then multiplied by 100, resulting in a nuanced and cohort-specific representation of the graduation dynamics of the nursing programme.

The calibrated delineation of these variables ensured a multidimensional and comprehensive exploration of the effectiveness and evolution of the nursing programme, painting a complex picture of its impact on student progression and academic achievement.

Data collection

The information was obtained from the university's academic records and organised into a Microsoft Office Excel® spreadsheet that allowed students to be identified by name and identification number for the period of initial enrolment in the nursing programme and the period of graduation from the programme. This facilitated the extraction of the number of students enrolled and graduated to generate the number of graduates by cohort and for the programme as a whole. In order to identify the aspects that facilitated or hindered the completion of the programme within 5 years from the initial enrolment, a self-administered questionnaire (Google form) was developed and sent to the graduates through institutional and/or personal emails registered by the students in their degree application, social networks and the WhatsApp group of graduates of the nursing programme.

Data analysis

The intricacies of data analysis unfolded as a meticulous orchestration, stemming from an urgent need to encapsulate the essence of the study's constructs. With empirical indicators evading identification, the researchers meticulously crafted a bespoke form, a manifestation of their exhaustive literature review. This dynamic quest navigated a maze of scholarly discourse, yielding two robust clusters that delineate the academic and the socio-economic-personal realms. This instrument, entitled "Characterisation of Aspects Influencing Higher Education Programme Completion", consisted of 17 closed-ended items cleverly positioned within a Likert scale framework. The gradation of responses ranged from '1', indicating challenges to timely programme completion, to '5', symbolising the catalytic role in facilitating programme completion within the required five-year period. To steer the analysis through this multifaceted terrain, the study plan embraced a descriptive statistical framework, manifested through the synthesis of frequency tables, indices and proportions. This approach harnessed the power of quantification to convey the essence of participants' responses, an approach reinforced by the formidable tabulation and control capabilities of Microsoft Office Excel® spreadsheets.

Institutional review board statement

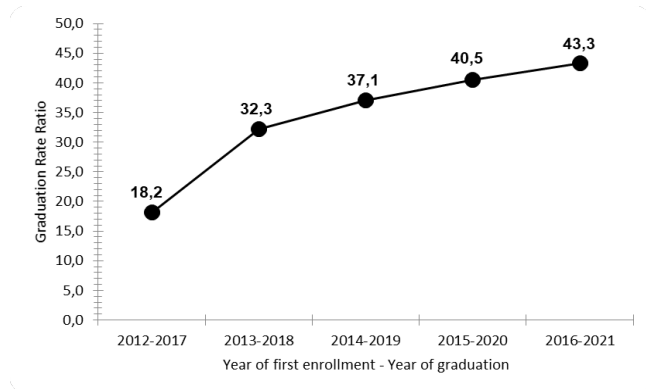
The research is considered low-risk because no psycho-physiological variables of the participants were manipulated; however, the confidentiality and privacy of the information (identification data of the students) was maintained through exclusive access to the database of the principal investigators by means of a password. The authors also undertook to guarantee the anonymity of the information. The study was approved by the Ethics Committee of the Faculty of Health in accordance with Law No. 05 of 22 April 2022. This manuscript has been prepared according to the STROBE checklist.

Results

Students who completed their studies were on average 26.3 years old (SD= +/- 4.6), one sixth were male and 25.7% lived in rural areas. Only 288 students completed their studies in the five-year framework (2017-2021), while the total number of students enrolled in the 2016-2020 period was 760, resulting in an overall programme completion rate of 37.9%. On the other hand, Figure 1 shows the upward trend of the graduation rate by cohort between 2012 and 2016, which ranged from 18.2% to 43.3%. This

represents a progressive increase from 2.8% to 5.1% in the 5 cohorts analysed.

Figure 1. Graduation rate by cohort of students enrolled in nursing programmes in 2012 - 2016



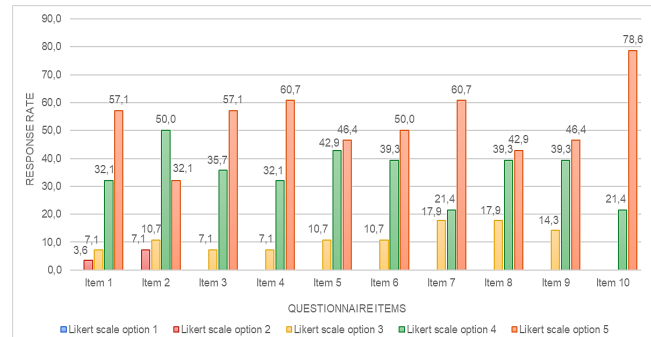
The survey was sent to 288 students who had completed the programme by the deadline, and only 28 responded (response rate 9.72%). The majority of graduates who participated were women (82.1%), with an average age of 28 years (SD: +/- 5 years), 60.7% working in clinical care, 25% in community roles (health promotion and disease prevention), and the remainder in teaching, health and safety, and school roles. Finally, the majority lived in the south-west of Colombia, with only two participants living and working abroad.

In terms of the academic aspects that made it easier to complete the programme within the time limit set, graduates mentioned: the call to serve humanity (78.6%), the interaction with the teacher in the labs, simulated hospital or clinical practice (60.7%) and the interpersonal relationships with classmates throughout the curriculum (60.7%). However, two aspects stood out as being close to the bottom of the list of elements that hindered the successful completion of the programme: interaction with the teacher in class (10.7%) and the integration of the knowledge acquired in class with the reality of the patient, his family and the socio-cultural-economic environment of the country (17.8%) (see Figure 2).

On the other hand, the socio-economic-personal aspects that facilitated the completion of the programme in the five years were: spiritual (60.7%) and economic (53.6%) family support (42.9%). However, one aspect that stood out because it was rated among the options that hindered the completion of the programme was: the lack of flexibility in the enrolment schedules of the courses of the study plan (25.1%). The item with the greatest variability in

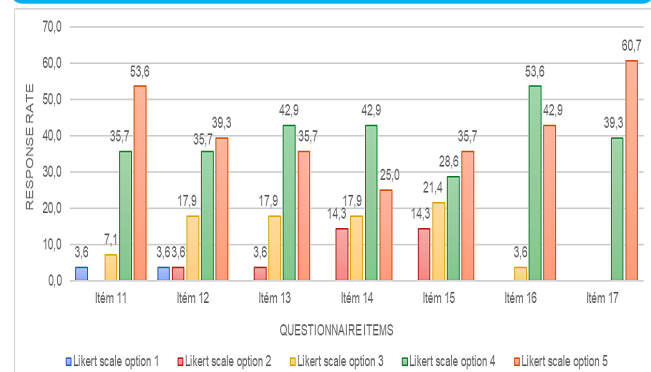
response options was number 15, which asks about extracurricular leisure, sports, health and cultural activities during the study period (see Figure 3).

Figure 2. Academic aspects that, according to graduates, determine the successful completion of the nursing programme are



Item1= Interaction with the teacher in class; item 2= The integration of the knowledge learned in class to the reality of the patient, his family and the socio-cultural-economic environment of the country; item3= The development of learning strategies (e.g., study groups, creating summaries, organizing fixed study schedules, etc.); item4= My interpersonal relationships with my peers throughout the curriculum; item5= My academic performance throughout the curriculum; item6= My adjustment to college life; item7= Interaction with the teacher in laboratories, simulated hospital or clinical practice; item8= Pedagogical strategies in the classroom; item9= The thematic contents of the courses in the curriculum; item10= My identification with the "vocation of service to humanity" that the discipline of nursing requires.

Figure 3. Socio-economic-personal aspects that, according to the graduates, determine the success of having completed the Nursing Programme



Item11= Family financial support (e.g., tuition, living expenses, study materials, vaccinations, transportation, food, etc.); item 12= Flexibility in enrollment schedules for courses in the curriculum; item13= Family support in the emotional and mental health aspects (e.g., accompaniment, advice, encouragement, affection); item14= The different methods of payment of financial tuition at the university; item15= Extracurricular activities (recreation, sports, health days, culture and university welfare); item16= Family social support (e.g., support from extended family, friends, boyfriends, girlfriends, neighbors); item17= Family support in spiritual matters (e.g., principles, values, beliefs, religion).

Discussion

This study found that nursing students complete their higher education process at the end of the second and beginning of the third decade of life, findings similar to those reported in other studies of nursing and other health professions such as medicine [5-8]. Nursing continues to be a predominantly female profession [1], but there is evidence of a gradual increase in male participation, particularly in programmes that focus on graduate networking [5,6] or are virtual and accelerated [7]. Few studies report on the origin of students, with only one mentioning that a small proportion (7.1%) live in rural areas [5].

On the other hand, the graduation rate in this study was 37.9%, a result similar to that reported by an African university in 2017 (26.8%) [2]. In contrast, studies developed in the United States report rates ranging from 49.6% (1.5) to 95% (6.8), which is in line with the results reported for professions such as medicine, which exceed 83% [7]. Similarly, the graduation rate per cohort is rarely socialised in research, the few that do present considerable differences, in an African university, this rate moved in a range from 7.3% (2003) to 27.5% (2006), the Faculty of Health being the one that presented rates above 35% in most cases [2], a percentage close to that found in this research, which ranged from 18.2% (2012) to 43.3% (2016). On the other hand, a study developed in the Netherlands reported that medical schools had a rate that ranged from 77-91%, being higher for those whose curricula emphasised active learning [4].

With regard to the academic factors mentioned by the graduates in this study that determined their successful completion, several are also recognised in the literature, among the most frequently mentioned are the pedagogical and assessment practices used by teachers [9,10], the academic performance of students throughout the curriculum [11-13] and integration into university life [10,14].

Two aspects stand out as receiving low scores: interaction with the teacher in class and the ability to integrate knowledge with reality. At the moment, there is no evidence to contrast these results from a quantitative point of view, but it is important to reflect on what happens in the classroom that causes the student to rate this item with a score of 2 and 3 (10.7%), what is the impact of the number of students in the class, the amount of topics to be covered in a reduced period of time, the methodological strategies

for transmitting knowledge, the quality and quantity of time the student has to prepare for theoretical classes and their subsequent study, etc.? All of these questions require a qualitative approach to the phenomenon, which makes it possible to analyse the reasons and transform the curricula.

However, there are four aspects in the literature that are associated with increasing the completion rate. The first is to offer more scholarships and student grants for the payment of tuition fees or financial support [10,11], which in this study had a low qualification (3.6%), i.e. their existence contributed very little to the successful completion of the programme. The second is to improve the distribution of the academic load in the curriculum [9], an aspect that was not evaluated in the present study, but which invites us to explore a more balanced organisation of the courses in the curricula that helps the student to have a more complete life.

The third aspect is the student's identification with the chosen career. In this research, this characteristic received the highest rating of all the elements evaluated (78.6%), which is consistent with what is reported in the literature [9]. A situation that should lead us to reconsider the processes of guidance in the choice of career and in the processes of admission to nursing programmes, in order to channel people with an affinity for the human sciences. Finally, although not evaluated in this study, the reduction of class sizes, personalised teaching and tutoring by teachers and/or peers is a constant finding in studies, highlighting the importance of teacher-student interaction in spaces outside the classroom [9,10,15-17].

On the other hand, in the present study, the student's economic situation was fundamental to the student's persistence and successful completion of the study plan. Several studies mention that this may be due to family support, belonging to an upper-middle socioeconomic class with parents who have a university degree, or having a job that allows the student to earn a salary above the country's per capita income are factors that contribute to successful completion of the study plan [9,11,18,19]. This last situation - working in the health sector while studying for a bachelor's degree in health - is highlighted by some authors as an element of motivation and empowerment to promote progress and completion of the bachelor's degree. However, numerous studies have linked employment status to attrition [9, 20].

The main limitation of this study was the limited access to information on the socio-demographic, work, family and academic characteristics of students and graduates, which made it difficult to carry out a more complex analysis to identify predictors of the graduation rate. It is worth exploring successful strategies to increase on-time completion rates in other parts of the world, with similar socio-demographic, cultural and economic characteristics to those in this study, in order to replicate them and measure their impact.

Conclusion

The overall graduation rate for the programme was 37.9%, while the graduation rate per cohort ranged from 18.2% to 43.3%; these values indicate that there is an attrition rate (students who continue in the study period, partially or completely drop out of the programme) of more than 50%. However, academic (e.g., interaction with the teacher in theory and practice), social (e.g., interpersonal interactions with fellow students), family (e.g., emotional and spiritual family support), economic (e.g., modalities of payment of financial tuition) and institutional (e.g., thematic content of the courses of the curriculum) aspects influence the successful completion of the study programme within the period set by the university, according to the graduates of the nursing programme.

These data take on greater significance when it is understood that the programme is a day programme, that most of the students study under educational credits and that the target population is people who are working and/or have as a previous level of training the qualification of auxiliary nurse, which means that they work 48 hours a week, in shifts of 8 hours, making it more complex to combine work, study and family life, or else they have to work one semester to study the next, taking the student more time than planned to complete their higher education. It is imperative that data on successful completion of the chosen nursing programme be published on university websites and requested by the Ministries of Higher Education in institutional evaluation processes, as well as in the development of short, medium and long-term strategies to ensure timely completion of higher education programmes.

Consent for publication

The authors read and approved the final manuscript.

Competing interest

The authors declare no conflict of interest. This document only reflects their point of views and not that of the institution to which they belong.

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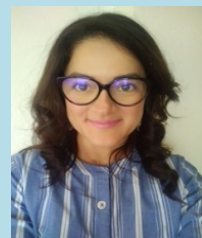
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