

Profile and Experiences of Nursing Students related to Tuberculosis: An Evaluation of Health Education

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Abstract—Objective: This study aimed to evaluate the sociodemographic profile of nursing students and their experiences with tuberculosis (TB) during undergraduate nursing at a public university. **Method:** Quantitative-descriptive research, carried out in the Undergraduate Nursing Course of a public university, in 2019, with the participation of 30 5th year students, who answered a self-administered questionnaire. It was used percentage and Pearson's Chi-square for statistical analysis. **Results:** The results show that the majority of academics never participated in courses or scientific events, as well as few had experiences with extracurricular activities. It was found that 76.6% underwent nursing consultation for TB patients; 70% did Directly Observed Treatment administration / supervision; 53.3% requested sputum tests; 50% scheduled and monitored patients' attendance; 33.3% had BCG vaccination; 23.3% advised on sputum collection; 20% applied and read tuberculin tests; 20% made a search for TB cases in the general clientele and no academic made a home visit to a patient with TB, the latter being a worrying fact. Thus, they consider to be partially prepared for the care of clients with tuberculosis. **Conclusion:** It is concluded that the academic experiences regarding tuberculosis need to be intensified and more valued by universities, just as there is a need to innovate teaching-learning methods and implement new methods for evaluating curricular axes in order to detect possible flaws in their structure.

Keywords—Tuberculosis. Teaching. Evaluation. Nursing.

I. INTRODUCTION

Tuberculosis (TB) is still a serious and challenging global public health problem. Worldwide, in 2018, around ten million people fell ill and 1.5 million people died as a result of it, being the main cause of death by a single infectious agent (Brazil, 2020).

Furthermore, late diagnosis is an important factor for the worsening of the clinical condition of patients with tuberculosis, a fact that hinders proper management and makes a good prognosis impossible (Salzani et al., 2017).

Therefore, it is observed that poor academic training of health professionals represents a factor for the delay in the diagnosis of tuberculosis, since teaching about this disease is considered a difficult task in institutions of higher education, mainly due to the lack of new ones. Attractive teaching methodologies capable of innovating the way of teaching and improving the skills of undergraduate and graduate students in the health field, especially among nursing students (Grecco et al., 2014).

Among others, the fragility of teaching will have a negative impact on both the management of the program and the assistance to people with the disease. Thus, in order to improve the teaching of academics in the health area, it is essential to develop innovations and investments in the evaluation of clinical competences and to ensure the quality training process. Investment in teaching needs to be provided from the academy, through meaningful learning, which emphasizes the use of active methodologies, capable of integrating different teaching strategies and developing critical and reflective thinking (Silva and Moraes, 2015).

The education of nurses has shown frequent changes. However, whatever the teaching-learning methodology

applied, assessment is the fundamental axis to guarantee the effectiveness of learning. For this to be successful in its formation, it is necessary that the teaching methodology is consistent with the form of applied assessment (Gomes et al., 2009).

The selection of the evaluation method must be guided by its purpose. Assessments aimed at detecting deficiencies in pedagogical projects, failures in the curricular structure and teaching methods must have great validity, reliability and reproducibility (Vieira et al., 2016).

A comprehensive assessment must then include cognitive aspects, skills and attitudes necessary for the exercise of the profession. It must also involve the different areas of nursing and cover as much knowledge as possible. Ideally, it should be done with objective methods, in standardized, diversified conditions and in viable circumstances (Gomes et al., 2009).

Thus, this study aimed to assess the sociodemographic profile of nursing students and their experiences with tuberculosis during their undergraduate nursing program at a public university.

II. METHOD

Exploratory research with a quantitative-descriptive approach, developed on the premises of the Undergraduate Nursing Course of a public university, in June 2019, with the participation of 30 academics enrolled in the 5th year and who were attending or have attended the Supervised Internship Curricular Component in Collective Health. Participants with a locked registration or who were away for any reason were excluded.

An instrument for data collection was used, this being a questionnaire with open and closed questions, self-administered, containing data of identification and characterization of the participants and information about participation in updates and previous experiences in tuberculosis.

Pearson's chi-square statistical tests for nominal variables were used for statistical analysis of the data, in order to indicate whether the observed frequencies showed a significant trend. To perform the test, a significance level of p-value <0.05 was adopted, that is, if p-value <0.05 is accepted H1 = The observed frequencies differ significantly for the different groups.

Thus, the data collected were tabulated, interpreted, processed and analyzed using descriptive and inferential statistics. For data analysis, computing resources were used, through processing in Microsoft Excel and Statistic Package for Social Sciences (SPSS) version 24.0, all in Windows 7 environment.

This study was approved by the Ethics Committee on Research with Human Beings, obeying Resolution No. 466/12 of the National Health Council by the number: CAAE: 12062919.6.0000.5170.

III. RESULTS AND DISCUSSION

Regarding the sociodemographic profile of nursing students, 90% are single, 60% are aged between 22 and 26 years old, 70% only study and 100% do not have another degree. As for academic activities, 53.3% underwent extracurricular internships, 43.3% participated in extension projects, 23.3% for monitoring and Institutional Program for Scientific Initiation Scholarships and 13.3% participated in other activities, in which participation in the academic league was mentioned and 3.3% did not participate in any of these activities, these being significant trends ($p < 0.05$) in this investigated population, as shown in Table 1 below.

Table 1: Sociodemographic profile of nursing students at a public university. Belém - Pará (2019).

Sociodemographic profile	N	%	P-Value ⁽¹⁾
Marital status			
Not married	27	90,0%	0.000*
Married	2	6,7%	
stable union	0	0,0%	
Others	1	3,3%	
Age Range			
18 to 22 years	9	30,0%	0.002*
23 to 26 years	18	60,0%	
27 to 30 years	2	6,7%	
30 to 36 years	0	0,0%	
Above 36 years	1	3,3%	
Occupation			
Just study	21	70,0%	0.001*
Studies and works in the health area	6	20,0%	
Studies and works in another area	3	10,0%	
Has another graduation			
Yes	0	0,0%	0.000*
Not	30	100,0%	
Activities during graduation			
Extracurricular internship	16	53,3%	0.021*

Extension	13	43,3%
Monitoring	7	23,3%
Institutional Program for Scientific Initiation Scholarships	7	23,3%
Others	4	13,3%
None	1	3,3%

Note: Results are based on non-empty rows and columns in each innermost subtable.

N- Number of academics.

(1) Pearson's chi-square test (Wilks' G^2) for independence (p -value < 0.05).

* Significant Values; NS - Non-Significant Values.

Interpretation of the test:

H0: The frequencies observed occur in the same proportion for the different groups.

H1: The observed frequencies differ significantly for the different groups.

Decision: Since the computed p -value is less than the significance level of $\alpha = 0.05$, the null hypothesis H0 should be rejected and the alternative hypothesis H1 accepted.

Source: Research protocol, 2019.

As for the students' previous experiences about tuberculosis, which can be seen in table 2, it was found that 76.6% never participated in a course and 86.6% never participated in scientific events on the theme. When asked about other types of contact with the theme, they were cited: curricular internship (36.6%); theoretical classes (26.6%); integrating seminar (16.6%); construction of educational technology (10.0%); reading scientific articles (3.3%); performing PPD (3.3%) and experiencing the disease (3.3%).

As for the practical activities related to tuberculosis that participated during the undergraduate course in nursing carried out in health centers, outpatient clinics or

hospitals, 76.6% stated that they had undergone a nursing consultation (or interview) with TB patients; 70% did Directly Observed Treatment administration / supervision; 53.3% requested sputum tests; 50% scheduled and monitored patients' attendance; 33.3% had an intradermal BCG vaccination; 23.3% advised on sputum collection; 20% applied and read tuberculin tests; 20% made a search for TB cases in the general clientele and no academic made a home visit to a patient with TB.

When asked if the student feels prepared to develop nursing activities in the Tuberculosis Control Program, 70% responded partially, as shown in Table 2 below.

Table 2: Distribution of nursing students at a public university according to previous experiences with tuberculosis. Belém - Pará (2019).

Previous experiences with tuberculosis	N	%	P-Value ⁽¹⁾
Attended a course on TB			
Yes	7	23,3%	0.001*
Not	23	76,7%	
Participated in some scientific event on TB			
Yes	4	13,3%	0.001*
Not	26	86,7%	
Had another contact with the theme			
Theoretical classes	8	26,7%	0.004*
Curricular stage	11	36,7%	

Integrating Seminar	5	16,7%	
Construction of educational technology	3	10,0%	
Reading scientific articles	1	3,3%	
Realization Tuberculin Skin Test	1	3,3%	
He experienced the disease	1	3,3%	
What practical activities related to TB were performed during the nursing course			
BCG intradermal vaccination	10	33,3%	0.001*
Application and reading of tuberculin skin tests	6	20,0%	
Search for tuberculosis cases in the general clientele	6	20,0%	
Guided on sputum collection	7	23,3%	
Nursing consultation	23	76,7%	
Ordering sputum tests	16	53,3%	
Administration / supervision of Directly Observed Treatment	21	70,0%	
Scheduling and control of patient attendance	15	50,0%	
Home visits to patients with TB	0	0,0%	
Others	0	0,0%	
Feels prepared to develop nursing activities at the Tuberculosis Control Program			
Yes	1	3,3%	0.001*
Partially	21	70,0%	
Not	8	26,7%	

Note: Results are based on non-empty rows and columns in each innermost subtable.

N- Number of academics.

(1) Pearson's chi-square test (Wilks' G^2) for independence (p -value < 0.05).

* Significant Values; NS - Non-Significant Values.

Interpretation of the test:

H0: The frequencies observed occur in the same proportion for the different groups.

H1: The observed frequencies differ significantly for the different groups.

Decision: Since the computed p -value is less than the significance level of $\alpha = 0.05$, the null hypothesis H0 should be rejected and the alternative hypothesis H1 accepted.

Source: Research protocol, 2019.

When analyzing the results, it was observed that, related to the age group, in a survey conducted in 2012, by the National School of Public Health (ENSP/Brazil), in partnership with the National Federation of Nurses (FNE/Brazil), the Brazilian Nursing Association (ABEn) and the Federal Council of Nursing (COFEN), characterized that nursing professionals are concentrated in the age group of 26 to 55 years, and that the vast majority are in the range of 26 to 35 years, which represents 35.98 % of total nursing professionals in Brazil (Silva, Nogueira and Sá, 2016).

A result similar to the present study was found in a survey conducted at four Brazilian universities, three public and one private, one in the south and three in the southeastern region of the Brazil, where a young profile of students was identified, aged between 20 and 24 years (50%), with an average age of 24.21 years (Bublitz et al. 2015).

The presence of young academics in nursing courses may be related to the incentive of the Brazilian government to enter higher education. However, because it is a young

population, the choice of profession seems to be immature, which can lead to higher dropout rates during the course (Freitas et al. 2012; Publitz et al. 2015).

It was observed in this research that a considerable percentage of academics study and work (30%) and this may be related to the fact that they are more engaged and give more value to the knowledge they acquire in the academy and are more concerned with their professional future, since they work to earn their own living.

Most academics have never participated in courses (76.7%) or events (86.7%) on TB, and this is a worrying fact, since the greater the knowledge and experiences acquired during graduation, the better the performances will be in future professional practice.

Therefore, it is important that academics are encouraged to participate in these extracurricular activities, since the nurse is a professional who needs to be constantly updated, as, at all times, new knowledge and technologies are created and for TB control to be efficient, with search for new cases, early and adequate diagnosis, treatment and cure in order to interrupt the chain of transmissibility. It is up to this professional to provide full assistance to the user with suspicion or confirmation of tuberculosis.

In this sense, it is the nurse's responsibility in Primary Health Care to initiate the treatment of new cases of pulmonary TB with positive sputum smear microscopy; perform the nursing consultation covering all aspects relevant to the user's treatment, according to the municipal protocols; order complementary exams and prescribe medications, according to the legal provisions of the profession and according to municipal protocols and other regulations established by the Ministry of Health (Seto and Costa, 2018).

The nurse has the function of analyzing the user in a comprehensive way, being responsible for investigating new cases of TB, because the anamnesis performed in the first visit, aims to implement nursing care clearly and precisely.

In this sense, it is noticeable the need to strengthen the nurse's performance regarding assistance to TB patients, since this assistance is sometimes hampered by the difficulty that the worker has in providing comprehensive care and, in return, dealing with limitations of the service, such as the high demand of users and the little time set aside for nursing consultation (Seto and Costa, 2018).

It was found that the Curricular Internship was the form of contact with the theme most mentioned in this study, which is considered important so that they can exercise the knowledge acquired in the theoretical classes, however the

extra-curricular activities come to add to the curricular, thus expanding their knowledge and clinical experience.

Among the activities on TB that must be carried out during the Supervised Internship offered in the 5th year of the undergraduate nursing course at the university in this study, it is highlighted that the majority of academics held nursing consultations and the administration / supervision of medication taking through Directly Observed Treatment. However, it is noteworthy that important items such as home visits to patients with TB were not mentioned by any of the participants.

Thus, universities should train and encourage teachers to encourage academics to participate in home visits to TB patients, since this is one of the nurse's duties and because it is a disease closely linked to the environment in which the individual lives. Thus, the greater the possibility of effective nursing interventions in preventing injury and breaking the transmission chain.

Clementino and Miranda (2015) corroborate with the statement that it is necessary to open spaces for dialogue with the community, generating reflection, problematization and a co-responsibility relationship, favoring humanization in the health work process, in the relationship between users and professionals.

Therefore, considering that most TB patients present themselves in situations of physical, emotional and social vulnerability, it is necessary to know the environment in which this individual is inserted, so that the health team performs a different approach for each case, thus minimizing barriers to TB care (Clementino and Miranda, 2015).

In this context, the Family Health Strategy (FHS) provides for the use of home visits as a way to equip professionals for their insertion and knowledge of the population's life reality, as well as the establishment of bonds (Clementino and Miranda, 2015).

The results show that there is a need to reorganize the teaching-learning process of nurses, with emphasis on the use of active methodologies, which are defined as important contributions to meaningful learning, as the training of professional nurses requires a solid mastery of clinical skills fundamental, such as communication with patients, physical examination, clinical reasoning and the proposition of diagnostic and therapeutic measures (Troncon, 2007).

His training has been the object of reflection and study over the years, while the new National Curriculum Guidelines (DCNs) for Nursing Graduation have directed changes in the training of this professional and require

more critical, reflective, flexible and versatile training. In this sense, several assessment tools have been used in undergraduate nursing courses (Medeiros et al., 2014).

The DCNs of health courses encourage the use of different teaching-learning scenarios and the integration between the contents, in addition to the fact that several strategies have been tested and compared as methods for teaching various pathologies, such as traditional classes, based on case readings, clinics, workshops, among others, but the demands of the world of work require new teaching methods. Therefore, the teaching-learning process is implemented through different tools and new successful methodologies have been described (Oliveira Neto, 2015).

Competency-based teaching involves constantly evaluating the acquisition of knowledge, skills and attitudes provided for in the DCNs, since its certification expresses the student's ability to work in the nursing career. It is through evaluation that information about learning is obtained. The central issue of the training of nurses must be the guarantee of the acquisition of these skills to meet the population's health demands with quality (Vieira et al., 2016).

The selection of the evaluation method must be guided by its purpose. Assessments aimed at detecting deficiencies in pedagogical projects, failures in the curricular structure and teaching methods must have great validity, reliability and reproducibility (Vieira et al., 2016).

Therefore, the evaluation of clinical competences in higher education has been presented as a need to ensure that the training process is of quality in the field of health, by highlighting the importance of mastering clinical skills, which allow them to solve a real health problem presented, or guide how to proceed to the solution of this (Silva and Moraes, 2015).

In nursing, clinical competence is configured as a fundamental aspect in professional training, as it encompasses dimensions of a cognitive, technical and relational character that are essential for the realization of humanized, integral, solidary care, incorporation of attitudes and ethical awareness, which must be developed during the course and the student's performance assessed regularly, by ensuring that the institution is training ethical, human and competent professionals, to provide adequate responses to the population's health needs (Silva and Moraes, 2015).

IV. CONCLUSION

From this study it was possible to verify that the academic experiences in relation to tuberculosis need to be

intensified and more valued by universities. There is a need to implement evaluations of curricular axes in order to detect possible flaws in its structure.

Corroborating these findings, the DCNs recommend that the training of nurses should be based on competences and skills to be developed during the training process and should privilege the technical-scientific, ethical-political, socio-educational conducts, in order to allow the future professionals recognize health as a right, in order to guarantee the quality of care at all levels of health care, planning, organizing, managing and evaluating the nursing work process, in partnership with other professionals in the workplace.

Therefore, the nurse must have training with a generalist, humanistic, critical and reflective profile, capable of knowing and intervening in the most prevalent health-disease situations in the national epidemiological profile, with emphasis on their region of activity, identifying the bio- psychosocial effects of its determinants.

Universities invest little in teaching evaluation and are stuck with archaic models of summative evaluation, in which many teachers are more concerned with grades than with the quality of teaching. This may be linked to the precariousness of training offered to teachers regarding the new assessment tools. Therefore, investing in new teaching and assessment methods is imperative in the current reality of higher education, as well as offering qualifications to teachers.

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ATTACHMENT

INSTRUMENT FOR DATA COLLECTION

I-PART- ACADEMIC PROFILE

Identification Code: D _____

- 01-Marital status: () single () married () stable () others
- 02-Age group () 18 to 22 years () 23 to 26 years () 27 to 30 years () 31 to 36 years () over 37 years.
- 03- Occupation:
Only studies ()
Studies and works in the health field ()
Studies and works in another area ()
- 04- Do you have another degree in health? () Yes () No. If so, which one?
- 05 - Did you carry out curricular or extracurricular activities during graduation? Which are?
() Monitoring () Extension () Extracurricular internship () Institutional Program for Scientific Initiation Scholarships () Others _____
() None

II- PART- PREVIOUS EXPERIENCES ON TUBERCULOSIS

- 01- Did you participate in any TB course (distance or face-to-face)? () Yes () No
- 02- Participated in some scientific event on TB (congresses, symposia, etc.) () Yes () No
- 03- Did you have any other type of contact with the theme? If so, which ones?
- 04- What practical activities related to tuberculosis did you participate during the undergraduate nursing course (in health centers, outpatient clinics or hospitals)?
() intradermal BCG vaccination
() application and reading of tuberculin skin tests
() looking for tuberculosis cases in the general clientele
() sputum collection (teaching the patient to spit)
() nursing consultation (or interview) to a TB patient
() request for sputum tests
() administration/supervision of Directly Observed Treatment
() scheduling and control of patient attendance
() home visitation to the TB patient
() others, which ones?
- 05- Do you feel prepared to develop nursing activities in the Tuberculosis Control Program?
() Yes () Partially () No.