






Demographic characteristics and social background of nursing technician students: a cross-sectional study

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ABSTRACT

Objectives: to describe the demographic characteristics and social background of nursing technician students. **Methods:** a cross-sectional descriptive study was conducted at one public and one private school in a county of São Paulo state, Brazil. The data were collected in the first semester of 2020 using a structured questionnaire and analyzed using descriptive statistics. **Results:** 330 students participated in the study, most of whom were female (77.3%); white (49.2%), black or brown (50.8%), were working (71.0%); lived with their mother (56.9%) and/or children (49.1%); attended a public primary school (92.4%), had a family income of 1 to 2 minimum wages (44.3%) and never went to the library (42.9%); 45% and 46.7%, respectively, of the students' mothers and fathers had not completed primary education. **Conclusion:** the majority of the nursing technician students are female, white or black/brown, live with a family member, work in the labor market and belonging to socioeconomic Class D, have no reading habits and their parents have a low level of education.

Descriptors: Professional Education; Nurse's Role; Nursing Education.

INTRODUCTION

The quality of nursing education across all levels of training, including secondary-level technical and professional training, is a subject of ongoing concern, especially in the current context marked by socioeconomic, educational, political, and cultural transformations and changes to legal frameworks. Discussions address the relationship between material and human teaching resources, encompassing the challenges of the teaching-learning process, contemporary curricular adjustments, teacher commitment and pedagogical practice, expectations of the workforce and difficulties encountered by students in different settings, and the resignification of concepts throughout life by those involved⁽¹⁾. Training is expected to be aligned with collective demands and current dynamics, considering that the health-disease process and care are the result of constantly changing historical social constructions, prompting critical reflection and (re)creation based on students' experiences and social reality.

Against this backdrop, nursing schools are under increasing pressure to admit students and have them complete the nursing technician course to meet the growing to admit demands of healthcare systems⁽²⁾. In Brazil, most nursing students are enrolled in secondary-level technical and professional nursing training courses, amounting to 150,000 students per year^(3,4). Approximately 75.35% of the 2,502,331 professionals registered with Brazil's Federal Nursing Council are nursing technicians, who spend more time providing direct care, but have limited training^(3,5).

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Understanding the demographic characteristics and social background of nursing technician students can help plan Political Pedagogical Projects for Courses, maximizing the effectiveness of the short period of training, considering the necessary singularities, while ensuring compliance with the Guidelines and Orientation for Nursing Technician Training, produced by the Department of Work Management and Health Education in partnership with the Center for Studies and Research and Technological Development in Collective Health and the Brazilian Nursing Association⁽⁶⁾.

Legally speaking, the aim is to establish a professional profile based on contemporary approaches to nursing education and professional practice aligned with the underlying principles and guidelines of the Brazilian Unified Health System (Portuguese acronym: *Sistema Único de Saúde – SUS*), with the aim of promoting humanized, critical and reflective training to develop an ethical, political, technical and social commitment to health care⁽⁷⁾.

Nursing technician training should take into account the socio-economic context and level of primary and secondary education in a country, since these factors can pose challenges for secondary-level professional and technical nursing training. In this respect, the persistent social inequality and high unemployment rates among the population (approximately 6.8 million people in Brazil were unemployed during the period from August to October 2024)⁽⁸⁾ should be highlighted, which can be present in families of nursing technician students in Brazil. This context needs to be considered because coping with these conditions can affect academic performance.

In addition, according to data from the Programme for International Student Assessment (PISA), conducted every three years by the Organization for Economic Co-operation and Development (OECD), in 2018, the mathematics, reading, and science scores of 15-year-old Brazilian students were below the recommended average. Only 2% of Brazilian students performed at the highest levels of achievement (Level 5 or 6) in at least one subject (OECD average of 16%), and 43% performed below Level 2 in all areas (OECD average of 13%). The survey also showed that socioeconomic status was a strong predictor of performance⁽⁹⁾.

It is possible that this situation has repercussions for nursing workforce development. In this respect, data from a national survey suggest the presence of weaknesses in the learning of nursing technician students, including difficulties in Portuguese (spelling) and mathematics (logic and calculation), which certainly affect learning when it comes to specific nursing knowledge⁽¹⁰⁾.

Historically, the vast majority of nursing workers in Brazil took condensed vocational courses characterized by political, educational, economic and social gaps and weaknesses, compromising the training of these professionals, who have been traditionally marginalized⁽¹¹⁾. This situation has changed, and a nursing technician course is now a minimum requirement for registration in the professional Board of Nursing⁽¹²⁾.

With advancement in this legislation, the number of private nursing schools offering this type of qualification has increased

considerably to attend the high demand from the public and private sectors for nursing technicians⁽¹³⁾.

Although these schools are registered in state education systems, evaluation of the quality of these courses has yet to be systematized at national level. The few studies investigating the training of nursing assistants and technicians in Brazil have taken a technicist approach, focusing on the reproduction of procedural knowledge and failing to reflect on reality and action, in other words, critical thinking. There is therefore a need for more spaces for reflection and the integration of these professionals so that they can take ownership of social responsibility in their everyday practice^(13,14).

The high demand for nursing technicians in health services, following regulatory updates by the Federal Nursing Council (COFEN), combined with gaps in the evaluation of the nursing technician courses, has led to private schools' commercialization of the nursing technician courses. National studies show a growth in the professional profiles of students of technical courses tailored to market demands, moving away from the prospects of comprehensive, actualized and, above all, humanized training⁽⁷⁾.

The demographic characteristics and social background of nursing technician students has yet to be analyzed by educational institutions in Brazil. However, this information is important because it can help inform pedagogical practices and education policy⁽¹⁴⁾.

The debate surrounding the relationship between professional qualifications and social origin initiated by Bourdieu⁽¹⁵⁾ is still relevant today, especially when it comes to the structural circumstances that reproduce class position in a capitalist society.

Considering the reality of education in Brazil and the need to enhance the quality of nursing technician education, this study essentially asks Who are the nursing students enrolled in technical and professional training courses in Brazil? Therefore, the aim of this study was to describe the demographic characteristics and social background of nursing technician students in Brazil.

METHODS

A cross-sectional descriptive survey was conducted at one public and one private educational institution in the state of São Paulo, Brazil. The public school is the oldest in the city and does not own the building. Created as an annex to a public hospital in the 1970s, the school had 32 students and 4 teachers and provided morning classes. The hospital's website dedicates two paragraphs to the school's objectives. The private school was founded at the end of the 1990s and rents a three-story building. It had 567 students and 11 teachers, each employed on temporary contracts. The presentation of the school and course on the institution's website includes photos of the facilities, information on entrance requirements, documents required for enrolment, the course load and course aims. However, the course plan is not presented.

The study population was students enrolled in these courses. Participants were selected using convenience sampling.

Participants were recruited in the classroom after obtaining authorization from the school managers and the teacher who was teaching the class at the time. The inclusion criterion was to be present at the time of data collection.

The data were collected in-person, in January, February and March 2020, before the COVID-19 pandemic was declared a health emergency by the World Health Organization.

Drawing on a theoretical framework underpinned by Critical Pedagogy as proposed by Paulo Freire⁽⁶⁾, a structured questionnaire was devised to obtain information about sociodemographic, economic and cultural characteristics, including sex, age, work, parents' education level, high school graduation year, frequency of and time spent on classroom and out-of-class activities, reading habits, family members living at home, skin color, religion and monthly family income.

The questionnaire was refined by three experts in secondary-level professional and technical nursing training who teach Licenciature Degree Courses. After meeting with the experts, four questions were modified to better reflect the research objectives, and one question was removed. The questionnaire was then analyzed by statistical consultants and modifications were made to its format.

The questionnaire was administered by three undergraduate nursing student-researchers in their final year of Bachelor in Science of Nursing and Licenciature Degree in Nursing.

The data were coded, double-entered, compared and corrected. Descriptive statistics (simple percentages and frequencies) were calculated and analyzed using *Statistical Package for the Social Sciences* (SPSS, version 25 (International Business Machines Corporation, United States, 2022)). Descriptive measures (simple frequency and percentage) were used for statistical analysis.

This study was approved by the institution's research ethics committee (Ethical Assessment Certificate N^o 21237419.3.0000.5393).

RESULTS

A total of 330 students participated in the study: 30 from the public school and 300 from the private school. Participants were predominantly female (77.3%) and aged between 20 and 30 (45.9%). The majority had an occupation (71.0%), monthly income of between 1 and 2 minimum wages (44.3%), had completed secondary school in the previous three to five years (34.9%), lived with their mother (56.9%) and/or children (49.1%) and were Catholic (40.1%) or evangelical (25.6%) (Table 1).

In addition, all participants attended public primary and secondary schools. Most participants (55.8%) enrolled in the nursing technician course at least six years after completing secondary school and a considerable proportion (36.1%) started the course at least 11 years after completing secondary school (Table 1).

Most of the students' parents had not completed primary education and most participants had 1 to 20 books at home (Table 2).

Table 1 - Demographic characteristics and social background of nursing technician students (n = 330), city in the countryside of the state of São Paulo, Brazil, 2020

Variables	n	%
Sex		
Female	255	77.3
Male	75	22.7
Age (years)		
< 20	45	14.3
20–24	80	25.6
25–30	64	20.3
31–40	84	26.5
41–50	36	11.3
> 50	5	1.5
Skin color		
Black or brown	160	50.8
White	152	48.3
Indigenous	2	0.6
Oriental	1	0.3
Lives with		
Mother	188	56.9
Children	162	49.1
Other	99	30.0
Lives alone	43	13.0
Occupation		
Caregiver	29	13.7
Salesperson	13	6.2
Cashier	11	5.2
Other	158	74.9
Religion		
Catholic	116	40.1
Evangelical	74	25.6
Other	133	34.3
Length of time since completing SE ^A (years)		
Yet to complete	1	0.4
< 3	24	8.9
3–5	94	34.9
6–10	53	19.7
11–20	70	26.0
> 20	27	10.1
Type of primary school		
Public	281	92.4
Private	13	4.3
Public and private	10	3.3
Type of high school		
Public	265	88.0
Private	12	4.0
Distance learning	9	3.0
EJA ^B	10	3.3
Public and private	5	1.7
Frequency of access to library		
Never	132	42.9
Sometimes	157	51.0
Often	19	6.2

Notes: SE^A: secondary education; EJA^B: Youth and Adult Education (basic education modality).

The students browsed websites more frequently than they read newspapers or general interest magazines and a large proportion talked to their family and friends about health (47.9%), their future profession (42.7%), school and their studies (32.4%) (Table 3).

With regard to out-of-class activities, the students spent most of their time working outside the home, followed by browsing the internet or social media (Graph 1).

DISCUSSION

There are several common elements between participants when it comes to social background. Most students were fe-

male, had a low monthly family income and parents with a low level of education, worked while studying and started the nursing technician course a few years after completing secondary school. The participants differed more when it came to age and religion.

These aspects, along with the trajectory related to primary and secondary education, professional course enrollment, reading habits, topics of conversation, and hours spent on out-of-class activities, portray the daily lives of these students, indicating possible pedagogical limitations in nursing technician training.

These characteristics suggest a context of social oppression in which the struggle to overcome social contradictions results in

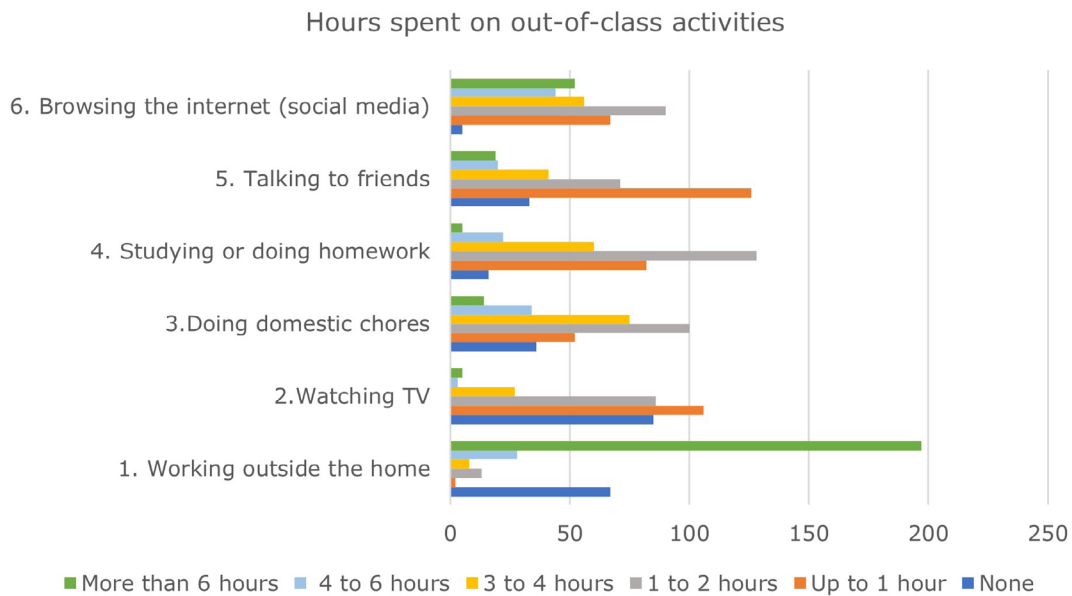
Table 2 - Level of education of the parents of nursing technician students and number of books at home (n = 330), city in the countryside of the state of São Paulo, Brazil, 2020

Variables	n	%
Mother's education level		
Never studied	19	6.3
Incomplete primary education	137	45.0
Completed primary education	7	2.3
Incomplete secondary education	22	7.2
Completed secondary education	68	22.4
Incomplete higher education	6	2.0
Completed higher education	19	6.3
Post-graduate education completed or not	12	3.9
Doesn't know	14	4.6
Father's education level		
Never studied	17	5.6
Incomplete primary education	143	46.7
Completed primary education	18	5.9
Incomplete secondary education	11	3.6
Completed secondary education	66	21.6
Incomplete higher education	4	1.3
Completed higher education	10	3.3
Post-graduate education completed or not	7	2.3
Doesn't know	30	9.8
Monthly family income (minimum wage)		
Up to 1	41	13.4
From 1-2	136	44.3
From 3-4	100	32.6
From 4-5	16	5.2
More than 5	14	4.6
Number of books at home		
Enough to fill one shelf (1-20 books)	196	64.9
Enough to fill two until five shelves (20-100 books)	57	18.9
Enough to fill various stacks of shelves (more than 100 books)	18	6.0
None	31	10.2

Table 3 - Academic and social practices of nursing technician students (n = 330), city in the countryside of the state of São Paulo, Brazil, 2020

Variables	Never %	Sometimes %	Almost always %	Always %
How often do you read:				
Newspapers	35.6	44.6	14.9	5.0
General interest magazines	30.2	50.7	15.8	3.4
Sites de internet	3.9	32.5	31.5	32.1
How often do your friends and family talk to you about:				
Political and social issues	8.5	43.6	35.2	12.7
Books, films or TV programs	3.3	24.8	51.0	20.9
Your school and studies	2.6	16.7	48.4	32.4
Your future profession	2.3	13.9	41.1	42.7
University entrance exams	23.9	39.7	23.2	13.1
Religion	10.9	30.4	31.4	27.4
Violence	9.8	28.9	38.4	23.0
Drugs	12.2	32.7	33.3	21.8
Your friends	8.2	23.7	40.5	27.6
Sex	12.5	37.0	33.0	17.5
Health	2.3	10.5	39.3	47.9

Graph 1 - Out-of-class activities performed by nursing technician students (n = 330), city in the countryside of the state of São Paulo, Brazil, 2020



praxis, that is, reflection and action of men upon the world in order to transform it⁽¹⁶⁾.

It is noteworthy that the socioeconomic condition has direct implications for the teaching-learning process, requiring the creation of student support strategies to minimize dropout rates, enhance academic performance and provide comprehensive education⁽¹²⁾.

The pursuit of technician nursing course among black/brown and white female students in this study's sample is very similar, with most students starting the course some years after completing secondary education, suggesting limited educational opportunities in his/her life journey.

Nursing education in Brazil and around the world has followed trends in the empowerment of women, who have overcome the

pain and suffering of oppression and discrimination in a patriarchal capitalist society characterized by sexism, machoism, classism, racism and other forms of social exclusion. In addition, in social context, the deeply-rooted patriarchal sexist practices and values have silenced women in the fields of education, politics and professional training throughout history, while at the same time creating rigid social structures that subordinate this group⁽¹⁷⁾.

Women entered the workforce in the 20th century after World Wars I and II, allowed their activities outside the home. This process was marked by struggle for recognition and overcoming barriers related to cultural and social norms, such as the fight for women's right to vote⁽¹⁸⁾. Against this backdrop, nursing became a legitimate space for work outside the home⁽¹⁹⁾. More than 75% of the 28 million nursing professionals around worldwide are women⁽²⁰⁾. In 37.3% of Brazilian families the breadwinner is a woman⁽²¹⁾, which is reinforced by the findings of the current study showing that 49.1% of participants lived with their children. Recent studies highlight women's empowerment, showing that they study more than men in pursuit of better employment opportunities, evidencing a linear relationship between education and female employment⁽²¹⁾.

However, in addition to performing the roles of mother, wife and domestic tasks, many women work longer hours, showing that the patriarchal family model prevails^(22,23). This increases women's work burden, negatively affecting self-care, well-being and/or mental health⁽²⁴⁾. In addition, women are often badly paid and experience poor working terms and conditions⁽²⁵⁾, with some female professionals feeling unprotected in the workplace and being subjected to psychological and/or physical violence, workplace gender discrimination, racial prejudice and discrimination because of their sexual orientation⁽²⁶⁾.

Another aspect is that black women tend to work longer hours than white women and are subjected to discrimination and stereotyping, while fighting for social recognition⁽²⁷⁾.

Enrolling in the technician nursing course, even later in life, as shown by the results of this study, may be a way for women to get on work market. A higher proportion of women undergoing higher education are white, showing that access to this level of education among brown/black women remains limited⁽²⁵⁾. Although black women tend to have a higher level of education than black men, they have fewer opportunities for career advancement⁽²⁶⁾.

The time female students dedicate to the course is limited because, in addition to working triple shifts, they are also care for their children, do the housework and perform other activities to supplement family income⁽²²⁾, affecting student autonomy and freedom. From a Freirean perspective⁽²⁸⁾, it could be said that for these future nursing workers to overcome the challenges they face, they must develop their awareness in pursuit of social emancipation.

The results also showed elements of diversity in the study sample, reflected in aspects such as different socioeconomic, educational, cultural and religious backgrounds. This multiplicity points to the need for pedagogical strategies that value pluralism, enabling meaningful learning that respects individual differences, promotes

mutual understanding and avoids judgement, re-signifying knowledge⁽²⁹⁾. Cultural diversity in this context encompasses the different practices, values, beliefs and identities that make up the participants' social universe. Among the elements of diversity, religion is highlighted as a factor that can impact cultural aspects of care⁽³⁰⁾, which is a fundamental right that requires tolerance across social, educational and workplace settings.

In recent years, formal education has undergone a process of downgrading, characterized by funding shortages, unequal access to quality education and deficiencies in teacher training. This in turn has resulted in gaps in the teaching-learning process, such as lack of stimulus for the development of higher-order cognitive skills, a superficial approach to curriculum content and poor integration between theory and practice. These gaps have a direct impact on the development of students' critical thinking skills, constraining their capacity for reflective analysis and informed decision-making and limiting their role in social praxis, which is essential for the transformation and improvement of collective conditions⁽³¹⁾.

Data from the National Household Sample Survey (in Portuguese acronym: *Pesquisa Nacional por Amostra de Domicílio* – PNAD) for the fourth quarter of 2020 revealed that 52.9% of those unemployed were women, 29.8% were aged between 18 and 24, 33% were brown/black (compared to 11.5% white), and 23.7% had not completed secondary education or equivalent, the highest rate in the last years⁽⁸⁾.

Low family income and unemployment are factors that can delay entry into vocational courses. Thus, aspects such as sex, age, education level and skin color or race are challenges to be overcome along the educational path. It is also worth noting that the findings reveal a low number of indigenous and oriental students, suggesting the need for inclusive policies targeting these groups aimed at reducing inequalities in access to vocational training.

The results of the present study show that the age of participants varied from 18 to 40 years, suggesting a needs assessment and the development of strategies to address gaps in essential areas of knowledge for nursing, such as basic math skills, which is a dilemma in the training process⁽¹⁰⁾.

With regard to reading habits, students' preference for websites corroborates with the limited access to books and low frequency of visits to the library. A national survey involving 208 municipalities showed that only 17% of the population visit libraries often or sometimes. These findings suggest that the habit of reading in reading spaces needs to be encouraged by educational institutions, especially given that one of the key reading influencers are teachers (15%)⁽³²⁾. The importance of reading reaches beyond simple knowledge of words, encompassing critical interpretation of the world and social relations⁽³²⁾. Reading should therefore be seen as a dynamic process of decoding and critically re-signifying the world that goes beyond words, enabling the reader to develop a fatalistic view of reality, since the act of reading involves not only the individual but also the their surrounding⁽³³⁾.

The results show that students prefer to talk about health, their future profession, school and studies. In this sense, it could be inferred that the coexistence of out-of-class dialogues contributes to the informal teaching-learning process, because it values speech, expression and situates the student as a subject who discusses, questions and reflects on their future in the world. This phenomenon highlights the key role that school plays in the social emancipation of these students. Coherent dialogue goes beyond the dimension of action and reflection, because people who engage in dialogue can transform the world in communion with one another and set themselves free from oppressive relationships⁽³³⁾.

The results regarding parental education reveal that the students' parents may experience difficulties in obtaining formal employment due to their low level of education, below the minimum education required by law. This can contribute to social inequality as parents with a higher level of education tend to have higher socioeconomic status and are therefore able to provide better quality education to their children, who in turn have better chances of employment and social advancement⁽³⁴⁾.

Another aggravating factor is the fact that public school students, who make up the majority of the study's sample, tend to further their studies in private colleges, as point other study⁽³⁵⁾. Considering that most of the students in our sample have a low monthly income (US\$217 to US\$434), this is a political, economic and educational paradox, because vulnerable people with lower purchasing power who need to ascend the social ladder are the ones who pay to access professional training. For this to happen, working while studying is a *sine qua non*. Thus, working, studying and social advancement entails fighting for survival in the midst of adversity.

Training should encompass basic, technical and specialized knowledge and address social needs, in line with the underlying principles of the SUS⁽¹²⁾. This is the proposal of the *Rede Federal de Educação Profissional, Científica e Tecnológica* (Brazilian Federal Network of Professional, Scientific and Technological Education - EPCT), which includes the *Rede de Escolas Técnicas do Sistema Único de Saúde* (the Brazilian Network of Technical Schools of the SUS - RET-SUS) across Brazil, making professional training a democratic project focusing on critical thinking, autonomy and civic responsibility. Professional Training is inclusive, recognizing the singularity of subjects and their multiple identities and underpinned by a pedagogical plan that integrates learning and practice⁽³⁶⁾. This approach reinforces the shortcomings of the banking model of education, which undervalues feelings and beliefs, is grounded in control, shows little empathy and uses professional knowledge to exercise power⁽³⁷⁾.

This study advocates for liberating education as proposed by Paulo Freire, raising critical, dialogical, participatory and transformative awareness of the social context in line with the underlying principles of the SUS⁽³⁸⁾. In this sense, student monitoring by teachers is important to legitimize formative potential⁽³⁹⁾, valuing previous knowledge and building new ones based on individual experiences. This enables students to exercise autonomy, creativity and dis-

alienated awareness and promotes liberating education that allows them to vivify the democratic horizon, thus creating possibilities of overcoming the obstacles that prevent social emancipation⁽⁴⁶⁾.

Nursing training in and for the SUS involves teaching that promotes protagonism and development of knowledge, skills and attitudes required to meet individual and collective health needs and respond to changes in demographic and epidemiological profiles⁽²⁹⁾. Only in this way will professionals be qualified to embrace in the Brazilian Health Care Networks (Portuguese acronym: *Redes de Atenção à Saúde* - RAS) into a Universal, Equitable and Comprehensive System that requires leadership and a diverse set of knowledge and skills to work within an interprofessional context⁽²⁹⁾.

However, studies increasingly show that the demographic and social characteristics of nursing technician students, such as a background of social and economic vulnerability⁽³⁶⁾, can influence their educational trajectory and relationship with the underlying principles of the SUS. It is therefore essential to consider how factors such as income, age, skin color/race and level of education can impact students' ability to adopt a critical and reflective approach to addressing social health needs. This underlines the importance of pedagogical strategies that promote awareness and the problematization of historical, political and social reality, connecting technical training to concrete health demands of public and collective health^(12,16,36).

The findings of this study highlight the importance of recognizing the demographic characteristics and social background of future nursing technicians for the training process. These factors should be considered social contradictions/boundary situations that must be overcome. This requires the redesign of pedagogical projects and training of professors on degree courses to help them recognize these backgrounds and shift towards a critical pedagogy approach. The possibility of emancipation is on the horizon, without which there is no freedom. The results of this study can also serve as guidance to help formulate public policies directed at professional and technical training aimed at addressing the social and economic needs of these students with social justice.

The limitations of this study are the use of non-probabilistic sampling and including students from one city in Sao Paulo state, therefore limiting the generalizability of our findings. Despite this, the findings bring to light historical structural issues related to professional and technical training.

CONCLUSION

The demographics characteristics and social background indicate that most of the nursing technician students were black/brown or white working women with low socioeconomic status from public schools and whose parents did not complete formal education. The age group and religion of the students differed, highlighting the importance of promoting inclusive and tolerant training environments. Most of the participants spent little time on out-of-class activities and had limited reading habits.

This characterization provides insights to help (re)formulation of pedagogical projects in the school and to improve the training of professors on degree courses so that they can recognize these backgrounds and shift towards a critical pedagogy approach. Recognizing and problematizing precarious educational conditions resulting from these backgrounds means to advances in nursing education policies. Efforts should be made to promote diagnostic assessment during the teaching-learning process, encompassing the complexity and dynamic nature of human beings. Training should be guided by the concepts and principles proffered by Paulo Freire, which are consistent with this profile of social and economic oppression, in pursuit of a social project in which strengthening public health as a duty of the State implies the democratic emancipation of citizens to the SUS, shifting away from a technicist approach devoid of critical and empathetic reflection.

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MLG: conceptualization; data curation; formal analysis; investigation; methodology; resources; validation; visualization; writing – original draft; and writing – review and editing.

MDA: conceptualization; data curation; formal analysis; investigation; methodology; resources; validation; visualization; writing – original draft; and writing – review and editing.

RAAC: conceptualization; data curation; formal analysis; investigation; methodology; project administration; resources; supervision; valida-

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Conflict of Interest

None.

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