







Trait anxiety in nursing undergraduates: relationships with interpersonal communication competence and sociodemographic characteristics

Traço de ansiedade de graduandos de Enfermagem: relações com competência em comunicação interpessoal e características sociodemográficas

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ABSTRACT

Objective: to correlate trait anxiety among nursing undergraduates with interpersonal communication competence and sociodemographic characteristics. **Methods:** this cross-sectional study examined key variables, including communication competence, social characteristics, and trait anxiety. The sample consisted of 30 participants, with a mean age of 24.3 (\pm 8.5). **Results:** the correlation between trait anxiety and interpersonal communication competence was low ($p=0.251$). Students who worked, particularly in nursing-related fields, exhibited higher trait anxiety scores, averaging 62.3 (\pm 10.3). Within interpersonal communication competence, the domain of Self-disclosure had the highest score (15.0), while Interaction management scored the lowest (8.0). **Conclusion:** the correlation between trait anxiety and interpersonal communication competence was low, though there was a tendency toward increased scale scores. Working students, especially those in nursing, demonstrated higher trait anxiety scores and greater difficulty in developing empathy. **Contributions to practice:** students must develop communication skills and learn to manage anxiety to feel more secure and competent. Sociodemographic characteristics, such as age, experience, and responsibilities, directly impact this competence.

Descriptors: Communication; Students, Nursing; Nursing Care; Interpersonal Relations.

RESUMO

Objetivo: correlacionar o traço de ansiedade de graduandos de Enfermagem com a competência em comunicação interpessoal e características sociodemográficas. **Métodos:** estudo transversal, cujas variáveis principais foram: competência em comunicação, características sociais e traço de ansiedade. A amostra foi composta por 30 participantes, com idade média de 24,3 (\pm 8,5). **Resultados:** a correlação entre o traço de ansiedade e competência em comunicação interpessoal foi baixa ($p=0,251$). Estudantes que trabalham, especialmente na área de enfermagem, apresentaram escores de traço de ansiedade mais altos 62,3 (\pm 10,3). Na competência em comunicação interpessoal, o domínio de autorrevelação teve o maior escore (15,0); e manejo das interações, o menor (8,0). **Conclusão:** a correlação entre o traço de ansiedade e a competência em comunicação interpessoal foi baixa, com tendência de aumento nos escores da escala. Estudantes que trabalham, especialmente na área de enfermagem, apresentam escores mais elevados de traço de ansiedade e maior dificuldade em desenvolver empatia. **Contribuições para a prática:** é importante os estudantes desenvolverem habilidades comunicativas e aprenderem a controlar a ansiedade para se sentirem mais seguros e competentes. Características sociodemográficas como idade, experiência e responsabilidades impactam diretamente essa competência.

Descritores: Comunicação; Estudantes de Enfermagem; Cuidados de Enfermagem; Relações Interpessoais.

Introduction

Anxiety is a normal physiological response to stimuli but becomes pathological when it occurs without apparent cause, affecting individuals biopsychosocially⁽¹⁾. This condition can progress to disorders such as phobias and panic syndrome. Anxiety is divided into two types: state anxiety (SAnxiety), a temporary emotional state marked by nervousness and nervous system reactivity, and trait anxiety (T-Anxiety), which describes individuals with heightened sensitivity to stimuli and a frequent perception of situations as threatening. People with high trait anxiety tend to experience heightened insecurity and fear in interpersonal relationships that threaten their self-esteem⁽¹⁻²⁾.

Increases in state and trait anxiety levels are closely linked to impairments in communication, resulting in changes in speech, posture, and voice. This relationship often reveals a tendency toward negative self-analysis, which, in turn, further intensifies anxiety levels. Symptoms can include changes in vocal tone, hand and foot tremors, sweating, and tachycardia, among others. These manifestations are typically related to the individual's perception of how the listener receives their communication⁽³⁻⁴⁾.

These characteristics directly influence communication competence, defined as the ability to relate effectively by exchanging information and interpreting communicative cues (both verbal and non-verbal) with clarity and accessibility. Consequently, the impact of anxiety on communication can hinder not only individual expression but also the quality of social interactions⁽⁴⁻⁵⁾.

In nursing, communication is crucial to care, impacting interactions among professionals, managers, and patients, as well as influencing decision-making and the development of management skills⁽⁶⁻⁷⁾. When communication fails, it can lead to iatrogenic events affecting both the team and the patients. Assertive communication is essential to providing humane, high-quality care and should be fostered during academic training to ensure empathy and effectiveness in patient care. However, often exacerbated by anxiety,

communication challenges undermine this interaction, presenting a particularly daunting issue in the job market, which demands strong technical and interpersonal skills⁽⁸⁻⁹⁾.

This study is justified by its focus on correlating anxiety in nursing undergraduates with communication competence and sociodemographic characteristics. The training phase creates excessive concerns and expectations among students regarding their future and professional success, underscoring the importance of understanding these factors to enhance undergraduates' learning process and overall well-being.

It is well-established that high anxiety levels directly impair students' communicative competence, compromising both patient interactions and clinical practice. In Brazil, the impact of anxiety on academic performance and internships is particularly noteworthy, while international studies report challenges primarily in social interactions⁽¹⁰⁻¹¹⁾.

This study contributes by exploring the relationship between anxiety, communication competence, and sociodemographic characteristics, offering a broader perspective and suggesting targeted interventions to improve nursing students' education and professional performance.

Thus, our objective was to correlate trait anxiety among nursing undergraduates with interpersonal communication competence and sociodemographic characteristics.

Methods

This cross-sectional study focused on three main variables: communication competence, social characteristics, and trait anxiety. To ensure methodological rigor, we followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines from the EQUATOR Network.

The study population consisted of 30 nursing students who met the inclusion criteria. We selected this sample size based on the study characteristics and the instruments used. According to the Central

Limit Theorem, a minimum of 30 participants is traditionally recommended. This Theorem posits that even with a non-normal population, the sample mean distribution approaches normality as the sample size increases⁽¹²⁾.

The participants were undergraduate nursing students from a private, for-profit higher education institution in São Paulo. Eligible students were those regularly enrolled from the first to eighth semester and at least 18 years old. Recruitment was conducted following authorization from course instructors, allowing researchers to enter classrooms to explain the study objectives.

Due to restrictions imposed by the COVID-19 pandemic, data collection encountered significant challenges, especially with limited in-person activities. Classes were divided into small groups following social distancing protocols, which increased the complexity of data collection. Additionally, many students opted not to attend in-person classes due to living with at-risk family members, further reducing participation. To address this, the research instruments were administered and collected on the same day during morning, afternoon, and evening practical classes in the “Nursing Care Process” course, the only course offered in person during that period. Data collection occurred from March to April 2021, when in-person academic activities were limited, necessitating careful planning to ensure student participation and data collection.

We used three instruments in this study: a participant characterization questionnaire covering variables such as age, sex, marital status, religion, income, and academic semester; the Interpersonal Communication Competence Scale (ICCS), validated with a good correlation index between domains and items. This self-administered scale includes 17 items distributed across five domains: Self-disclosure, Assertiveness, Interaction management, Immediacy, and Environment control. Responses range from 1 (never) to 5 (almost always), with a total score, after item recoding, between 17 and 85, indicating higher communication skill levels with higher scores⁽⁹⁾.

The third instrument was the State-Trait Anxiety Inventory (STAI), widely used to assess two distinct types of anxiety through self-report. It consists of two independent scales: one measures state anxiety (S-Anxiety), reflecting the individual’s feelings at a specific moment, and the other measures trait anxiety (T-Anxiety), identifying the general predisposition to respond anxiously in various situations. This instrument is designed for use across diverse populations, including non-psychiatric adults, students, and others. Its versatility makes it suitable for investigating anxiety in both research and clinical practice, offering a comprehensive view of temporary and enduring anxiety manifestations⁽¹³⁾.

The inventory consists of two 20-item questionnaires divided into two parts. Part I—State Anxiety (S-Anxiety)—evaluates how the student feels “now, at this moment,” with response options ranging from 1 (not at all) to 4 (very much so). Part II—Trait Anxiety (T-Anxiety)—assesses how the student “generally feels,” with responses ranging from 1 (almost never) to 4 (almost always). Both questionnaires use a 4-point Likert scale, where students select the option that best reflects their feelings.

Within this scale, there is a subscale with 13 items related to unpleasant feelings of tension and apprehension consciously perceived through increased autonomic nervous system activity. These items are reverse-coded (items 2, 3, 4, 8, 9, 11, 12, 13, 14, 15, 17, 18, 20). For this research, we opted to use only the Trait Anxiety (T-Anxiety) Inventory.

Continuous variables were described using means, medians, standard deviations, and interquartile ranges, while categorical variables were described using absolute and relative frequencies. Scores were calculated by summing all responses for each questionnaire, and data were decoded per the instrument’s recommendations.

To assess whether ICCS and T-Anxiety Inventory scores varied based on socioeconomic and demographic characteristics, we conducted hypothesis tests. The Mann-Whitney or Kruskal-Wallis tests were employed for continuous variables, while the Fisher’s

exact test was used for categorical variables. Analyses were performed using R software version 3.5.1, with a 5% significance level for hypothesis testing.

The Universidade Cidade de São Paulo Research Ethics Committee approved this study (opinion 4.467.811/2020) in compliance with national and international research ethics standards involving human subjects. All participants signed the Informed Consent Form. The Ethics Review Presentation Certificate was registered under number 40697820.1.0000.0064.

Results

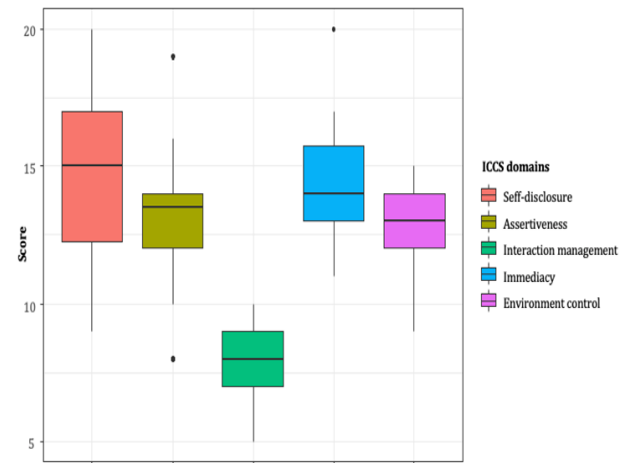
In analyzing the distribution of sociodemographic characteristics, we observed a mean age of 24.3 years (SD = 8.5). Most participants were female (25; 83.3%) and from São Paulo (27; 90.0%). The most frequently self-reported race was White (18; 60.0%), and the predominant religion was Protestant (17; 56.7%). Approximately 57% of the sample was employed, with a monthly income of two minimum wages, equivalent to R\$ 2,090.00 (36.7%).

Regarding academic experiences related to interpersonal communication, 21 participants (70.0%) had not taken any communication courses, and 21 (70.0%) considered themselves empathetic. When asked about participating in group work at the university, where public presentation by all members was not mandatory, 23 students (79.3%) indicated they would volunteer to present to the class. Furthermore, 17 participants (58.6%) believed that developing interpersonal communication skills is essential and can be achieved through academic activities involving group work and oral presentations. All 30 participants (100.0%) expressed concern about being empathetic and maintaining good communication with peers, while 28 (96.6%) reported their communication with peers and professors as satisfactory and effective.

In terms of factors causing fear of public speaking, 13 participants (44.8%) cited shyness as the primary reason, whereas 14 (50.0%) believed that competent communication involves the ability to express ideas clearly. When communicating with faculty, 15

students (51.7%) reported no hesitation in asking questions when they had doubts. Additionally, 23 participants (79.3%) stated that when they perceived a peer did not understand a term or expression, they would attempt to clarify it to ensure understanding.

Figure 1 shows boxplot charts representing the domains of the Interpersonal Communication Competence Scale. The darker line in the figure denotes median values, and the size of the boxes indicates whether the data is skewed.



ICCS: Interpersonal Communication Competence Scale

Figure 1 – Domains of the Interpersonal Communication Competence Scale (n=30). São Paulo, SP, Brazil, 2021

Table 1 presents the median values for the Interpersonal Communication Competence Scale domains, revealing that the highest score was in the Self-disclosure domain and the lowest in Interaction management.

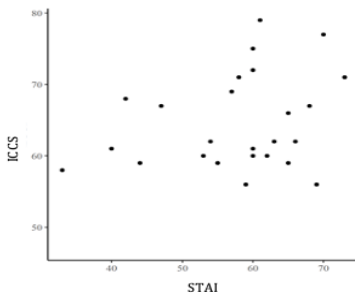
Table 1 – Comparison of domains in the Interpersonal Communication Competence Scale (ICCS) (n=30). São Paulo, SP, Brazil, 2021

ICCS domains	Median [1st quartile; 3rd quartile]
Self-disclosure	15.0 [12.2; 17.0] (n = 30)
Assertiveness	13.5 [12.0; 14.0] (n = 30)
Interaction management	8.0 [7.0; 9.0] (n = 29)
Environmental control	14.0 [13.0; 15.8] (n = 30)
Immediacy	13.0 [12.0; 14.0] (n = 29)

ICCS: Interpersonal Communication Competence Scale

The mean score for trait anxiety was 57.67 (SD = 9.88; n = 27). The median, first, and third quartiles were 60.00, 53.50, and 65.00, respectively, with trait anxiety scores ranging from 33 to 73 points. The mean score for interpersonal communication competence was 63.7 (SD = 7.1; n = 29), with a median, first, and third quartiles of 62.5 and 68, ranging from 47 to 79 points.

The correlation between trait anxiety and interpersonal communication competence was low, with a coefficient of 0.2332 (p = 0.251). Figure 2 illustrates the relationship between the two scores, showing a tendency for interpersonal communication competence scores to increase as trait anxiety scores rise. However, there is significant dispersion in the mid-range values of trait anxiety, preventing a clear pattern in interpersonal communication competence scores. Further studies are needed to confirm this correlation.



ICCS: Interpersonal Communication Competence Scale; STAI: State-Trait Anxiety Inventory

Figure 2 – Dispersion between scores of trait anxiety and interpersonal communication competence. São Paulo, SP, Brazil, 2021

Table 2 presents the mean values and standard deviations for trait anxiety and interpersonal communication competence scores, distributed according to different demographic variable levels. We observed that individuals currently employed had significantly higher anxiety scores than those not employed, with this difference being even more pronounced among those working in nursing. No significant differences were found in scores for the remaining variables.

Table 2 – Comparison of mean scores for trait anxiety and interpersonal communication competence across socioeconomic and demographic categories (n=30). São Paulo, SP, Brazil, 2021

Variables	STAI Score	ICCS Score
Age (years)		
18 to 19	55.0 ± 10.4 (n = 11)	65.0 ± 9.1 (n = 12)
19 to 23	58.1 ± 9.9 (n = 7)	63.7 ± 6.5 (n = 7)
23 to 51	60.6 ± 9.4 (n = 9)	62.1 ± 4.7 (n = 10)
p-value	0.416	0.651
Sex		
Female	56.5 ± 10.5 (n = 22)	62.4 ± 6.1 (n = 24)
Male	62.6 ± 4.2 (n = 5)	69.8 ± 8.9 (n = 5)
p-value	0.223	0.064
Place of birth		
São Paulo	57.5 ± 10.4 (n = 24)	63.7 ± 7.2 (n = 26)
Grande São Paulo	60.0 (n = 1)	72.0 (n = 1)
Other	58.5 ± 4.9 (n = 2)	59.5 ± 0.7 (n = 2)
p-value	0.994	0.273
Marital status		
With partner	60.6 ± 8.9 (n = 9)	62.6 ± 5.4 (n = 10)
Without partner	56.2 ± 10.2 (n = 18)	64.3 ± 7.9 (n = 19)
p-value	0.340	0.565
Race		
White	58.6 ± 10.6 (n = 17)	64.1 ± 8.3 (n = 17)
Black	52.7 ± 12.5 (n = 3)	60.0 ± 1.0 (n = 3)
Mixed	57.4 ± 7.6 (n = 7)	64.1 ± 5.8 (n = 9)
p-value	0.545	0.647
Religion		
Catholic	55.0 ± 2.2 (n = 4)	60.2 ± 7.0 (n = 6)
Protestant	49.3 ± 8.8 (n = 17)	64.6 ± 7.0 (n = 17)
Spiritist	51.0 ± 6.9 (n = 5)	65.6 ± 7.9 (n = 5)
Other	49.0 (n = 1)	59.0 (n = 1)
p-value	0.691	0.652
Currently employed		
Yes	52.0 ± 6.9 (n = 15)	64.4 ± 6.1 (n = 16)
No	48.5 ± 8.5 (n = 12)	62.8 ± 8.4 (n = 13)
p-value	0.366	0.495
Working in nursing		
Sim	62.3 ± 10.3 (n = 9)	63.9 ± 6.6 (n = 9)
No	55.3 ± 9.0 (n = 18)	63.6 ± 7.5 (n = 20)
p-value	0.039	0.813
Minimum wage		
Up to 2	58.1 ± 6.8 (n = 14)	62.5 ± 6.6 (n = 15)
Over 3	57.2 ± 12.7 (n = 13)	64.9 ± 7.6 (n = 14)
p-value	0.846	0.743
Semester		
1st	62.9 ± 6.4 (n = 7)	64.1 ± 6.6 (n = 8)
2nd	55.4 ± 10.2 (n = 13)	62.8 ± 8.0 (n = 14)
3rd	55.0 ± 15.6 (n = 2)	60.5 ± 2.1 (n = 2)
4th	47.5 ± 7.8 (n = 2)	64.0 ± 5.7 (n = 2)
5th	54.0 (n = 1)	62.0 (n = 1)
6th	69.0 ± 1.4 (n = 2)	72.0 ± 7.1 (n = 2)
p-value	0.114	0.705
Class period		
Morning	52.2 ± 10.3 (n = 5)	63.2 ± 4.1 (n = 5)
Afternoon	58.2 ± 10.6 (n = 8)	62.4 ± 6.9 (n = 8)
Evening	59.3 ± 9.4 (n = 14)	64.5 ± 8.1 (n = 16)
p-value	0.315	0.732

STAI: State-Trait Anxiety Inventory; ICCS: Interpersonal Communication Competence Scale

The mean score for trait anxiety was 57.67 (SD = 9.8), and for interpersonal communication competence, it was 63.7 (SD = 7.1). The correlation between the two scores was low. The subgroup of currently employed participants showed higher trait anxiety scores than those who were unemployed, particularly if employed in nursing.

Discussion

The predominance of white women in nursing programs in Brazil highlights an area in need of attention. Historically, nursing has been associated with caregiving roles often attributed to women, specifically Black women during the colonial period, who served as wet nurses and caretakers⁽¹⁴⁻¹⁵⁾.

In the current landscape, we observe shifts in the demographic profile of nursing students. This predominance of white women in nursing can be attributed to various social, economic, and educational factors, such as unequal access to higher education and opportunities. Black women face systemic barriers, including economic challenges, racial prejudice, and a lack of effective affirmative policies. Structural racism in nursing perpetuates the stereotype of a young, middle-class white nurse, shaped by the standards of the Anna Nery School in 1942, which explicitly excluded men and Black women⁽¹⁶⁾.

The choice of nursing as a career for many white women may be influenced by social and familial perceptions of the profession, viewed as stable and respectable, with promising employment prospects. This perception attracts middle-class women with access to better educational resources. Women represent 70% of healthcare professionals, and over 85% of Brazil's nursing workforce comprises women, reinforcing the view of nursing as a predominantly female profession. In summary, nursing education in Brazil remains grounded in a traditional scientific model, perpetuating stereotypes that associate the profession with femininity⁽¹⁵⁻¹⁶⁾.

Regarding racial inequality, 57.4% of Black

women in nursing hold technical positions, while white women are more likely to occupy leadership roles⁽¹⁶⁻¹⁷⁾. Furthermore, 64.3% of nursing professionals report witnessing discriminatory behaviors in the workplace⁽¹⁷⁻¹⁸⁾. These figures underscore the underrepresentation of Black individuals in leadership and the critical need to address these inequities to create a more inclusive healthcare system, advancing diversity policies within training programs and professional settings⁽¹⁸⁾.

In terms of communication competence, nursing students generally demonstrate ease in interpersonal relationships but face challenges in developing empathy and active listening. These skills are essential for building trust and preventing errors often rooted in communication failures⁽¹⁹⁻²⁰⁾.

Anxiety, which is common during training, adversely impacts communication, impairing the ability to build empathetic connections with patients and colleagues. Developing communication skills during training is crucial for students to learn how to manage their emotions, make assertive decisions, and improve their academic and professional performance⁽²¹⁻²²⁾. Support is fundamental helping students manage these feelings, thus fostering a healthy, collaborative learning environment⁽²²⁾.

The academic activities and professional routines of students significantly increase anxiety levels, affecting both academic performance and interpersonal relationships⁽²²⁾. For nursing technicians, the heavy workload and demands of hospital settings make it even more challenging to balance studies and work, often leading to extreme fatigue and insufficient time for effective learning. This context hampers concentration, information retention, and active participation in classes and practical activities. Consequently, anxiety escalates, negatively impacting both academic performance and the development of professional skills⁽²²⁻²³⁾.

Anxious students tend to avoid social interactions, hindering social support and the development of essential communication skills for professional

practice⁽²³⁾. The pandemic exacerbated this situation, as social distancing and remote learning limited interaction opportunities and hands-on learning. Higher education institutions play a critical role in preparing nursing students by providing resources and experiences that foster skill development, particularly in communication⁽²⁴⁻²⁵⁾. However, adapting practices during the pandemic posed a challenge, impacting training and intensifying students' anxiety.

Communication, in particular, is a key skill as it involves not only conveying technical information but also expressing feelings and intentions. Despite its importance, many students report that topics related to communication—such as emotions, behaviors, and humanization—are addressed in a fragmented and disconnected way between theoretical instruction and practice. Students need more consistent preparation to use communication effectively, not only in specific courses but also in practical activities that integrate these skills, preparing them for professional practice⁽²⁵⁻²⁶⁾.

Proficiency in communication within nursing involves two dimensions: technical content (facts, data, or practical knowledge tied to training) and the emotional aspect (what the professional intends to convey and how they feel about the information or knowledge). Without a comprehensive understanding of the patient, interactions can become superficial and fail to achieve therapeutic goals, demonstrating the need for more integrated and reflective teaching on this skill⁽²⁶⁻²⁷⁾.

Lack of communication skills, a requirement that should be cultivated during nursing education, exacerbates symptoms of anxiety. Effective communication is fundamental to patient care, conveying important information clearly and understandably. When nurses lack this skill, misunderstandings, stress, and anxiety can arise, impacting both the professionals themselves and the patients⁽²⁴⁻²⁵⁾.

Nursing programs must include specific training to enhance communication skills, focusing on techniques such as active listening, empathy, and

clarity in information sharing. These skills enable a more humane and effective care approach while also helping to reduce anxiety in high-pressure situations. Additionally, educational institutions should conduct early assessments of anxiety symptoms beyond students' control, providing appropriate psychological support. In doing so, a supportive environment is created, helping students better manage their emotions and promoting the full development of their academic and interpersonal competencies.

Study limitations

The limitations of this study relate primarily to the cross-sectional study design, which allowed for the identification of associations but did not establish causality. Additionally, the sample size could have been larger to better represent the proposed associations, and the distribution of students across semesters in the undergraduate nursing program was not uniform. Another limiting factor was the COVID-19 pandemic period, which complicated data collection due to the necessary safety protocols to prevent infection and disease spread.

We recommend conducting further studies with more participants and including diverse health-related groups. This is especially relevant given the current context, where anxiety symptoms are increasingly prevalent in the population and may influence learning processes and the development of communication skills.

Contributions to practice

The study identified relevant associations between anxiety traits, sociodemographic characteristics, and interpersonal communication competence. Our findings contribute to practical applications by emphasizing the need for nursing students to develop communication skills during their training. Additionally, this study underscores the importance of managing anxiety symptoms, which can facilitate the de-

velopment of confidence in applying communication skills competently.

Conclusion

We found a correlation between anxiety trait scores and interpersonal communication competence. Results indicated that interpersonal communication competence scores also tended to increase as anxiety trait scores increased. However, this correlation was low, and further studies are needed to confirm its validity. We also observed that the subgroup of participants who were employed had higher anxiety trait scores than those who were not employed.

Among the domains of interpersonal communication competence, the highest score was for Self-disclosure, while Interaction management scored the lowest. This finding suggests that while students find it relatively easy to establish interpersonal relationships, they face challenges in empathetically understanding others' needs. In terms of academic experiences related to interpersonal communication, participants considered their communication with peers and instructors to be good and reported a consistent effort to be empathetic. Shyness was cited as the most significant factor influencing public speaking, and participants understood competent communication as being able to clearly express what they intended to convey.

Authors' contributions

Conception and design, data analysis or interpretation; drafting of the manuscript or critical revision of its intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the manuscript, ensuring that any questions are appropriately investigated and resolved: Pires FO, Grilo APS, Maruxo HB, Chamon ARM. Drafting of the manuscript or critical revision of its intellectual content; final approval of the version to be published: Oliveira LN, Silva RF.

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