Original Article

# Professional nursing practice environment from students' perspective in COVID-19

## Ambiente de prática profissional em enfermagem na perspectiva de estudantes na COVID-19

## Ambiente de práctica profesional de enfermería por la perspectiva de estudiantes en el COVID-19

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## Abstract

**Objective:** To assess the professional nursing practice environment from the perspective of students in the context of the COVID-19 pandemic.

**Methods:** Cross-sectional study conducted with a convenience sample of 43 students attending the last grade of the Nursing Undergraduate course at a federal university located in the city of São Paulo, SP, Brazil. Characterization variables: sex, ethnicity, age, place of internship and a question on whether they have worked and/or did an extracurricular internship in the area. The Practice Environment Scale - Brazilian validated version, consisting of 24 items and five subscales, was applied. Data were analyzed using descriptive and inferential statistics with the following tests: Kruskal Wallis, ANOVA, Tukey, t-student and Mann Whitney. Logistic regression analysis was performed. A significance level of $p<0.005$ was considered.

**Results:** Subscale 3 "Staffing and resource adequacy" was the only one with an unfavorable mean (53.49%). The variable "having worked and/or done an extracurricular internship" was statistically significant in Subscale 2 "Nurse manager ability, leadership and support of nurses" ($p=0.003$). On overall mean, students rated the environment as favorable ($p<0.001$).

**Conclusion:** Despite the context, most students rated the environment as favorable. The variable "having worked and/or done an extracurricular internship" was statistically significant. The training of leaders, the strengthening of continuing education programs and involvement of nurses in activities, problem solving and internal committees of the institution are considered preambles to offer qualified care within a close to favorable environment of professional practice.

## Resumo

**Objetivo:** Avaliar o ambiente da prática profissional em enfermagem na perspectiva de estudantes no contexto da pandemia da COVID-19.

**Métodos:** Estudo transversal, realizado com amostra por conveniência de 43 estudantes da última série do bacharelado em Enfermagem de uma universidade federal, localizada no município de São Paulo, SP, Brasil. Variáveis de caracterização: gênero, etnia, idade, local de estágio e um questionamento se já trabalharam e/ou realizam estágio extracurricular na área. Aplicou-se o Instrumento Practice Environment Scale - versão brasileira validada, composto de 24 itens e 5 subescalas. Os dados foram analisados com estatística descritiva e inferencial por meio dos testes: Kruskal Wallis, ANOVA, Tukey, t-student e Mann Whitney. Foi realizada a análise de regressão logística. Considerou-se como nível de significância de $p<0,005$.

**Resultados:** A Subescala 3 "adequação da equipe e de recursos" foi a única que apresentou média desfavorável (53,49%). A variável "ter trabalhado e/ou realizado estágio extracurricular" mostrou-se estatisticamente

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significante na Subescala 2 "habilidade, liderança e suporte dos coordenadores/supervisores de enfermagem aos enfermeiros/equipe de enfermagem" (p=0,003). Na média geral, os estudantes avaliaram o ambiente como favorável (p<0,001).

**Conclusão:** Apesar do contexto, a maioria dos estudantes avaliaram o ambiente como favorável. A variável "ter trabalhado e/ou realizado estágio extracurricular" foi estatisticamente significativa. A capacitação das lideranças, o fortalecimento de programas de educação continuada e o envolvimento dos enfermeiros nas atividades, resoluções de problemas e comissões internas da instituição, são considerados preâmbulos para ofertar uma assistência qualificada dentro de um ambiente de prática profissional próximo do favorável.

## Resumen

**Objetivo:** Evaluar el ambiente de la práctica profesional de enfermería por la perspectiva de estudiantes en el contexto de la pandemia del COVID-19.

**Métodos:** Estudio transversal, realizado con muestra por conveniencia de 43 estudiantes del último año del grado de Enfermería de una universidad federal, ubicada en el municipio de São Paulo, São Paulo, Brasil. Variables de caracterización: género, etnia, edad, lugar de la pasantía y un interrogante sobre si ya trabajaron o realizan una pasantía extracurricular en el área. Se aplicó el Instrumento Practice Environment Scale - versión brasileña validada, compuesto por 24 ítems y 5 subescalas. Los datos fueron analizados con estadística descriptiva e inferencial por medio de las pruebas: Kruskal Wallis, ANOVA, Tukey, t-student y Mann Whitney. Se realizó el análisis de regresión logística. Se consideró un nivel de significación de p<0,005.

**Resultados:** La Subescala 3 "adecuación del equipo y de recursos" fue la única que presentó un promedio desfavorable (53,49 %). La variable "haber trabajado o realizado una pasantía extracurricular" se mostró estadísticamente significante en la Subescala 2 "habilidad, liderazgo y suporte de los coordinadores/supervisores de enfermería a los enfermeros/equipo de enfermería" (p=0,003). En el promedio general, los estudiantes evaluaron al ambiente como favorable (p<0,001).

**Conclusión:** Pese al contexto, la mayoría de los estudiantes evaluaron al ambiente como favorable. La variable "haber trabajado o realizado una pasantía extracurricular" fue estadísticamente significante. La capacitación de los liderazgos, el fortalecimiento de programas de educación continua y la participación de los enfermeros en las actividades, resoluciones de problemas y comisiones internas de la institución, son considerados preámbulos para brindar una asistencia calificada dentro de un ambiente de práctica profesional próxima a lo favorable.

## Introduction

COVID-19 (Coronavirus Disease 2019) is caused by the SARS-CoV-2 virus (Severe Acute Respiratory Syndrome Corona Virus 2). Similar to other diseases caused by coronaviruses (for example, SARS-CoV-1 and MERS-CoV) that can infect humans, the SARS-CoV-2 is transmitted by droplets and contact. Transmission by aerosols is considered as well, since the virus is found in higher concentrations in the lungs than in the upper airways.[1] The person-to-person transmission route is via respiratory or contact. The virus remains viable and infectious in aerosol for hours, and even days on abiotic surfaces, which indicates the plausibility of transmission by droplets and fomites, in addition to aerosol.[2,3]

Given this scenario, health professionals represent a group of high exposure to the new coronavirus hence, at a higher risk of contracting and/or developing the disease. Measures to mitigate the exposure of this group are taken for their protection, such as the use of Personal Protective Equipment (PPE) and biosafety procedures. Considering the importance of monitoring the situation of health professionals, the Ministry of Health monitors absences related to COVID-19, suspected cases, confirmed cases and deaths.

The care process is key in nursing, and this profession is the one closest to the patient. In the context of the pandemic, the reality increases the possibility of the occurrence of stressors in professionals, such as the feeling of vulnerability, fear of contagion and stress.[4] Faced with this situation, health professionals must be able to deal with the challenges presented by this pandemic, and of course, be in an environment that provides proper and safe working conditions for the exercise of their role.

The assessment of the professional practice environment is an important indicator to support nurses' work because, as team leaders, they need to be aware of the pillars organizing their practice to guarantee the quality of care provided.[5]

The professional nursing practice environment are the organizational characteristics that facilitate or limit the exercise of nursing work, and the presence of facilitating characteristics can benefit people and the quality of care.[6,7]

The Nursing Work Index (NWI) was developed in the 1980s to assess job satisfaction and quality of care in different hospitals, and is a widely known instrument to measure these characteristics.[7] In 2000, the NWI was improved with the objective of synthesizing and measuring the presence of certain characteristics of the work environment, resulting in the Nursing Work Index Revised (NWI-R).[5,8]

The instrument was validated and adapted for various cultures in the world, including Brazil, with the purpose to assess the characteristics of the work environment in hospitals.[9] The last review of the instrument culminated with the development of the Practice Environment Scale (PES), which aims to check the presence of characteristics that favor professional nursing practice.[7]

The PES was considered a useful tool to measure the nurses' work environment and recommended by organizations in the United States of America (USA). For example, the National Quality Forum (NQF) has endorsed it as a preferred measure of the nursing practice environment and The Joint Commission (JC) has included the PES as an indicator of nursing care effectiveness.[6,10,11] Thus, the PES was widely adapted and validated in various international contexts.[12] As it is a short instrument with methodological rigor that results in appropriate measures, in 2017, the scale was validated for the Brazilian culture (PES-Brazilian version).[13]

Therefore, evaluating the nursing professional practice environment is important not only to provide quality patient care, but also to promote a favorable environment for the healthcare team in the context of the COVID-19 pandemic. The PES is composed of 24 items and five subscales that analyze different facets of the professional field, from intrinsic characteristics of professionals, such as leadership and skill, to organizational and environmental issues. Thus, by encouraging students who are completing a degree in nursing and doing the Supervised Curricular Internship unit to assess the professional practice environment and identify strengths and opportunities of improvement for the exercise of the nursing work process, they can learn what they will do throughout their professional career. Few Brazilian studies have used the PES for assessment of the professional nursing practice environment from the perspective of nursing students in a pandemic context.

Therefore, the aim of this study was to assess the professional nursing practice environment from students' perspective in the context of the COVID-19 pandemic.

## Methods

Study conducted with students enrolled in the last year of the Nursing Undergraduate course at a public university located in the south of the city of São Paulo - SP, Brazil, who were doing the Supervised Internship program from July to August 2020.

The Curricular Unit corresponding to the Supervised Curricular Internship branches into two axes that happen synchronously, primary care and hospital care. Half of the total student population was completing their internship program in Basic Health Centers (Portuguese acronym: UBS) while that the other half completed the internship in hospital units. At the end of the internship period, students change axis. Note that the questionnaire was applied only once to each student. Seventeen students on sick leave or absent for personal reasons were excluded. All students doing the Supervised Curricular Internship program were included in the study.

Data collection was performed from July to August 2020. Non-probabilistic sampling was adopted, and the total number of students was chosen for convenience. The final sample consisted of 43 people divided between nine Health centers (two mixed centers, seven centers of Family Health and Strategy) and 17 in hospital units of four different institutions in the city of São Paulo.

Characterization variables: age, sex, ethnicity, place of internship and a question on whether they had worked and/or done an extracurricular internship in the health area, in addition to domains of the Practice Environment Scale - validated Brazilian version.[13]

We built a questionnaire using the Google Forms® online tool for the collection of variables, with estimated time of approximately seven minutes for completion.

The PES - Brazilian version is composed of 24 items and five subscales. subscale 1 – Nurse participation in hospital affairs (five items) demonstrates the role and value of nurses in the broad hospital context; subscale 2 - Nursing foundations for quality of care (seven items) emphasizes a nursing philosophy focused on high standards

of quality of care; subscale 3 – Nurse manager ability, leadership and support of nurses (five items) focuses on the role of the nurse manager in the institution, encompassing key abilities necessary for a nurse in this position; subscale 4 - Staffing and resource adequacy (four items) describes the need for an adequate team and resource support for the provision of quality care, and subscale 5 - Collegial nurses-physician relations (three items) characterizes the positive labor relationships between nurses and physicians.[7,13]

The response options ranged from one to four points using a Likert scale, as follows: Strongly disagree (one point); Disagree (two points); Agree (three points) and Totally agree (four points).[13] The higher the score, the greater the presence of favorable characteristics to the development of nursing activities.

To evaluate the subscales, the mean of the sum of participants' responses must be calculated; values above 2.5 are considered a good score on the subscale.[11] Thus, scores above 2.5 on none or on a subscale were classified as unfavorable working environment; and mean scores above 2.5 obtained in four or five subscales were considered a favorable professional nursing practice environment.[7,12]

The Google Forms® questionnaire was distributed to students via WhatsApp inviting them to participate.

Data were analyzed using descriptive and inferential statistics using the following tests: Kruskal Wallis, ANOVA, Tukey, Student's t and Mann Whitney. In addition, logistic regression analysis was performed. A significance level of $p<0.005$ was adopted.

The study was submitted, evaluated and approved by the Research Ethics Committee under opinion number 4.144.659 and CAAE 33776520.7.0000.5505.

## Results

Forty-three students participated in this study; mean age of 23.2 years, 76.74% (n=33) were female, 86.05% (n=37) were white, 72.09% (n=31) had never worked in the health area or done an extracurricular internship, 55.81% (n=24) were doing the Supervised Curricular Internship in hospital units and the rest in Basic Health Centers. Table 1 shows the descriptive measures of the Practice Environment Scale (PES) - validated Brazilian version, overall and by subscale, considering the classification of the professional nursing practice environment as favorable or unfavorable.

**Table 1.** Absolute and relative frequencies of the PES- validated Brazilian version, overall and by subscale, considering the favorable and unfavorable classification

| Practice environment scale – validated Brazilian version | Favorable n(%) | Unfavorable n(%) |
|---|---|---|
| Subscale 1: Nursing foundations for quality of care | 29(67.44) | 14(32.56) |
| Subscale 2: Nurse manager ability, leadership and support of nurses | 26(60.47) | 17 (39.53) |
| Subscale 3: Staffing and resource adequacy | 20(46.51) | 23(53.49) |
| Subscale 4: Nurse participation in hospital affairs | 27(62.79) | 16(37.21) |
| Subscale 5: Collegial nurse-physician relations | 37(86.05) | 6(13.95) |
| Professional nursing practice environment | 22(51.16) | 21(48.83) |

PES - Practice Environment Scale – validated Brazilian version

In table 2, different statistical tests were used to analyze the association of each subscale and the other variables for data analysis. Table 2 shows the associations of the characterization variables with the overall scale and subscales of the PES - validated Brazilian version.

Table 3 shows the univariate logistic regression analysis. In this analysis, the variable of interest is the environment classified as unfavorable and compared to the subscales: Nurse participation in hospital affairs; Nurse manager ability, leadership and support of nurses, Staffing and resource adequacy, Collegial nurse-physician relations.

In table 3, we observe that all subscales are impacted by the unfavorable environment. Thus, we identified interference in Nurse participation in hospital affairs with OR 36.4, <0.001; Nurse manager ability, leadership and support of nurses with OR 9.2, p=0.001; Staffing and resource adequacy with OR 22.4, <0.001; Collegial nurse-physician relations with OR 20.4, p=0.002.

**Table 2.** Association of characterization variables with overall PES and by subscale

| Variables | | PES overall | | PES subscales | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | S1 | | S2 | | S3 | | S4 | | S5 | |
| | | AM | p-value | AM | p-value | AM | p-value | AM | p-value | AM | p-value | AM | p-value |
| Sex | Female | 2.77 | 0.575[A] | 2.82 | 0.679[A] | 2.76 | 0.867[A] | 2.83 | 0.964[A] | 2.53 | 0.168[A] | 2.93 | 0.018[B] |
| | Male | 2.87 | | 2.74 | | 2.80 | | 2.82 | | 2.85 | | 3.36 | |
| Ethnicity | Asian | 2.75 | 0.844[A] | 2.2 | 0.502[C] | 3 | 0.676[C] | 2.4 | 0.817[C] | 3.5 | 0.485[C] | 2.66 | 0.367[D] |
| | White | 2.79 | | 2.84 | | 2.76 | | 2.84 | | 2.56 | | 3.0 | |
| | Mixed race | 2.60 | | 2.4 | | 2.43 | | 2.6 | | 2.63 | | 3.33 | |
| | Black | 3.0 | | 2.8 | | 3.10 | | 3.0 | | 2.83 | | 3.33 | |
| Have you ever worked and/or done an extracurricular internship in the health area? | ECN | 2.92 | 0.010[C] | 2.91 | 0.186[C] | 2.95 | 0.003[C] | 2.93 | 0.176[D] | 2.72 | 0.221[C] | 3.13 | 0.056[D] |
| | ECSN | 2.49 | | 2.51 | | 2.38 | | 2.55 | | 2.42 | | 2.74 | |
| | ECNS | 2.69 | | 2.8 | | 2.5 | | 3.0 | | 2.0 | | 3.33 | |
| | ECSS | 1.75 | | 2.2 | | 1.28 | | 1.6 | | 2.0 | | 2.0 | |
| Internship area | Primary care | 2.61 | 0.025[C] | 2.63 | 0.068[A] | 2.56 | 0.049[A] | 2.58 | 0.017[A] | 2.43 | 0.121[A] | 2.98 | 0.549[B] |
| | Hospital | 2.94 | | 2.94 | | 2.93 | | 3.02 | | 2.74 | | 3.07 | |
| Environment | Unfavorable | 4.786 | <0.001[C] | 4.8 | <0.001[D] | 4.537 | <0.001[C] | 4.957 | 0.001[C] | 4.463 | 0.001[C] | 5.497 | 0.038[D] |
| | Favorable | 3.127 | | 3.145 | | 3.168 | | 3.109 | | 2.943 | | 3.27 | |

PES - Practice Environment Scale - validated Brazilian version; S1 - Subscale 1 - Nursing foundations for quality of care; S2 - Subscale 2 – Nurse manager ability, leadership and support of nurses; S3 - Subscale 3 – Staffing and resource adequacy; S4 Subscale 4 – Nurse participation in hospital affairs; S5 - Subscale 5 - Collegial nurse-physician relations; AM - Arithmetic Mean; p - significance level; A – student's t; B - Mann Whitney; C - Analysis of variance (ANOVA); D - Kruskal Wallis; ECN - I do not do an extracurricular internship and I have never worked in the health area; ECSN - Yes, I do an extracurricular internship, but I have never worked in the health area; ECNS - Yes, I have worked in the health area, but I do not do an extracurricular internship; ECSS - Yes, I have worked in the health area and I do an extracurricular internship

**Table 3.** Univariate analysis between the subscales and the unfavorable environment of the PES

| Subscales | Odds ratio | 95% CI odds ratio | p-value |
|---|---|---|---|
| Nurse participation in hospital affairs | 36.441 | [7.634; 279.995] | <0.001 |
| Nurse manager ability, leadership and support of nurses | 9.226 | [2.578; 38.077] | 0.001 |
| Staffing and resource adequacy | 22.488 | [5.038; 134.114] | <0.001 |
| Collegial nurse-physician relations | 20.403 | [3.417; 181.144] | 0.002 |

PES - Practice Environment Scale – Validated Brazilian Version

## Discussion

Among the limitations of the study, the fact that it was conducted at a single university stands out, making it relevant to invest in further research to confirm the results found. Furthermore, the fact that the sample consisted only of nursing undergraduate students at a single public university resulted in a small number of participants.

The present study was developed in the context of the COVID-19 pandemic with students completing the Bachelor's Degree in Nursing at a public education institution. For the International Year of Nursing declared by the World Health Organization, the reflection on the environment for the development of nursing practice has a unique and guiding value. In the pandemic context, professional vulnerabilities took on significant proportions in the face of coping with this disease and its socio-sanitary consequences, which will be reflected over the next few years. Rethinking the environment and professional training in this context is essential to align nursing actions in a more assertive and measurable way, a fundamental point for the necessary appreciation and recognition of these professionals.

From the perspective of data provided by the international literature, a slightly lower mean score was found, compared to data from studies in the United States, China and Turkey that also assessed the professional practice environment where nursing is inserted.[14-16]

Thus, the presence of an uneven social reality and a wide economic gap that corroborates a low level of development in the country may explain the presence of this inferior result.[17] At the same time, when bringing this analysis to the national territory and specifically to environments financed by the National Health Service (Brazilian SUS), we deal with the presence of a wide and constant devaluation of public health services, which were the targets of this study, when compared to a private professional practice environment and the international literature that demonstrate a professional environment with higher quality and capacity for nursing development.[18-20]

When detailing the findings after application of the validated Brazilian version of the PES, the presence of a low score in subscale 3 – "Staffing and

resource adequacy" was found, which is in line with other studies mentioned above that also showed a lower evaluation than others, even when measured in professional practice environments characterized as "favorable".[14,15,20] However, the international literature indicates a constant professional devaluation regarding Nursing, as these professionals are subjected to extensive workloads associated with precarious working conditions, and low pay.[21] Such factors may affect the nursing professional's quality of life and mental health. Furthermore, the identified lack of physical and material resources, professionals, planning and preparation are determinants that become challenges during a pandemic, directly impact the nursing team, hamper dignified and efficient care and intensify fear, workload and other stressors.[22]

An emotional support initiative for nursing professionals in the context of a pandemic states that the frequently expressed feelings were: anxiety, fear, ambivalence, depression and exhaustion. These emotions are triggered by the lack of personal protective equipment, pressure from the leadership, continuous news in the media, risk of contracting the disease, high mortality rates, death of co-workers, loneliness, discrimination for being a health professional and emotional exhaustion with the workload.[23] An integrative review also showed implications such as anguish, burnout, post-traumatic stress disorder, sleep disorders, obsessive-compulsive disorder, in addition to lower levels of job satisfaction.[24]

In a study conducted in a Spanish public hospital, the PES was used to qualify the practice environment, and a moderate professional exhaustion was evaluated using the Maslach Burnout Inventory instrument. A significant association was identified between the staffing and resource adequacy with the feeling of professional dissatisfaction and the presence of emotional exhaustion. This demonstrated that a low number of staff associated with inadequate resources leads to a higher incidence of dissatisfaction with feelings of exhaustion and/or burnout. On the other hand, when this aspect was seen as favorable by nurses, the intention to leave the job was lower.[25]

Furthermore, it was evident that the professional practice environment directly affects nursing care omission; units with a better PES score have a lower rate of omission of care, while units with lower scores have a higher frequency. Another fact was that among all subscales, the "Staffing and resource adequacy" stood out as the most relevant in the concept "predicting lower rates of omission of care", explaining that the professional practice environment is directly related to the provision of quality and comprehensive care.[26]

The subscale Nurse participation in hospital affairs was also impacted by the work environment. In a study, it was found that the lack of opportunities to discuss hospital affairs with other professionals, namely health and care needs, and the insufficient participation in administrative decisions affected autonomy and leadership. Furthermore, these factors enhance the fragility existing in the work environment and such data were also evidenced in the present study. This attitude causes low professional recognition, compromises the motivation to follow up with quality care and causes failures in the maturing of bonds.[27] Recently, good relationships between the multidisciplinary and nursing teams have been identified as extremely critical in pandemic contexts. Relationships with the multidisciplinary team that are based on approximation, courtesy and closer ties provide favorable clinical outcomes for individuals undergoing treatment. Furthermore, a good relationship between the different components of the health team, based mainly on the equal opportunity for everyone to be heard, increases the feeling of collegiality and creates an atmosphere of trust and mutual respect, which are essential feelings for a team of professionals working during a pandemic and intrinsic to quality care.[22]

The variable "having worked and/or done an extracurricular internship" was statistically significant, indicating that students who had extramural experiences had an unfavorable assessment in subscale 2: "Nurse manager ability, leadership and support of nurses" compared to students who did not do an extracurricular internship or had already worked in the health area. According to a study, the curricular internship is often insuffi-

cient to familiarize the student with the services and assess them more critically. Thus, the results demonstrated that those who had this experience acquired differentiating characteristics of practical theoretical articulation, influencing their professional training positively, in addition to providing an approximation with reality.[28]

Thus, all PES subscales are important to achieve a better work environment for nurses, highlighting the subscales "Nurse manager ability, leadership and support of nurses", "Nursing foundations for quality of care" and "Nurse participation in hospital affairs". The initial strategies for improving the environment can be based on the training of leaders, effective implementation of actions aimed at the development of continuing education programs, quality assurance, daily monitoring of patients and involvement of nurses in the resolution of daily problems and internal committees of the institution.

## Conclusion

Assessing the professional nursing practice environment from students' perspective in the context of the COVID-19 pandemic allowed the identification of favorable and unfavorable factors. Despite the context, most students rated the environment as favorable. Some subscales suffered negative impacts, such as "Staffing and resource adequacy" and "Nurse participation in hospital affairs". These elements strongly influence aspects such as dissatisfaction and labor exhaustion, omission of care and loss of autonomy. In the current context, these repercussions can disturb the practice environment, and managers should organize the services and resources to minimize these impacts. The variable "having worked and/or done an extracurricular internship" showed a significant statistical value when analyzed together with subscale 2 "Nurse manager ability, leadership and support of nurses", since students with an extramural experience can experience different realities and be more critical when evaluating the practice environment where they operate. Furthermore, the study showed that although all PES scales are important for a favorable work environment, the subscales "Nurse manager ability, leadership and support of nurses", "Nursing foundations for quality of care", and "Nurse participation in hospital affairs" stood out the most. Thus, the training of leaders, the strengthening of continuing education programs and the involvement of nurses in activities, problem solving and internal committees of the institution are considered initial paths to offer quality care within a more favorable professional practice environment.

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## Collaborations

Nery VD, Linares MO, Martins B, Reis MB, Campos MMY, Taminato M and Balsanelli AP collaborated with the study design, analysis and interpretation of data, article writing, relevant critical review of the intellectual content and approval of the final version to be published.

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