

**MEDITATIVE PRACTICES IN SCHOOL: PERCEPTIONS ABOUT LEARNING
AND FEELINGS IN ELEMENTARY SCHOOL STUDENTS**

***PRÁTICAS MEDITATIVAS NA EDUCAÇÃO ESCOLAR: PERCEPÇÕES SOBRE
APRENDIZADOS E AFETOS EM ESTUDANTES DO ENSINO FUNDAMENTAL***

***PRÁCTICAS MEDITATIVAS EN LA EDUCACIÓN ESCOLAR: PERCEPCIONES
SOBRE EL APRENDIZAJE Y SENTIMIENTOS EN ESTUDIANTES DE PRIMARIA***



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ABSTRACT: The article analyzes the effects of meditative practices on Primary School students, focusing on emotional, behavioral, and cognitive aspects. The research was conducted in three public schools in the state of São Paulo, involving 1,083 students and 48 teachers, using questionnaires, interviews, and emoji-based scales. The results indicate an increase in feelings of peace, love, and sleepiness, and a decrease in anger, sadness, curiosity, and joy (associated with agitation). The teachers reported improvements in students' reasoning, attention, and socialization. Meditative practices contributed to students' concentration, emotional balance, and well-being, being seen as effective tools for comprehensive education. The study highlights the importance of integrating emotional health into the school curriculum, especially in the post-pandemic context, fostering more affective and welcoming learning environments.

KEYWORDS: Emotional health. Learning. Affectivity. Basic Education.

RESUMO: O artigo analisa os efeitos das práticas meditativas em estudantes do Ensino Fundamental I, com foco nos aspectos emocionais, comportamentais e cognitivos. A pesquisa foi realizada em três escolas públicas de São Paulo com 1.083 alunos e 48 professoras, utilizando questionários, entrevistas e escalas com emojis. Os resultados indicam aumento nos sentimentos de paz, amor e sono, e redução de raiva, tristeza, curiosidade e alegria (associada à agitação). As professoras relataram melhorias no raciocínio, atenção e socialização dos estudantes. As práticas meditativas contribuíram para a concentração, o equilíbrio emocional e o bem-estar dos alunos, sendo vistas como ferramentas eficazes para a formação integral. O estudo destaca a importância de integrar a saúde emocional ao currículo escolar, especialmente após a pandemia, promovendo ambientes de aprendizagem mais afetivos e acolhedores.

PALAVRAS-CHAVE: Saúde emocional. Aprendizagem. Afetividade. Educação Básica.

RESUMEN: El artículo analiza los efectos de las prácticas meditativas en estudiantes de la Educación Primaria (Primer Ciclo), con énfasis en los aspectos emocionales, conductuales y cognitivos. La investigación se llevó a cabo en tres escuelas públicas del estado de São Paulo, con la participación de 1.083 alumnos y 48 profesoras, utilizando cuestionarios, entrevistas y escalas con emojis. Los resultados indican un aumento en los sentimientos de paz, amor y sueño, y una disminución de la ira, tristeza, curiosidad y alegría (asociada a la agitación). Las profesoras informaron mejoras en el razonamiento, la atención y la socialización de los estudiantes. Las prácticas meditativas contribuyeron a la concentración, el equilibrio emocional y el bienestar de los alumnos, siendo consideradas herramientas eficaces para una formación integral. El estudio resalta la importancia de integrar la salud emocional en el currículo escolar, especialmente después de la pandemia, promoviendo entornos de aprendizaje más afectivos y acogedores.

PALABRAS CLAVE: Salud emocional. Aprendizaje. Afetividad. Educación Básica.

Introduction

Discussions and the incorporation of emotional health education practices within the context of basic education—particularly in early childhood education and the early grades of elementary school—have been on the rise in recent decades (Rumenos et al., 2023; Spazziani et al., 2024) and have intensified in the wake of the covid-19 pandemic, following the resumption of in-person school activities in 2022.

The World Health Organization has been promoting mental health initiatives in schools; among its strategies is the promotion of mental health among children and adolescents through the implementation of school-based programs focused on social and emotional learning (WHO, 2024). Currently, biological and psychological stressors have negatively affected some schoolchildren, with many of them exhibiting behaviors and complaints related to anxiety, as well as behavioral and emotional problems that impact their physical health. School activities that incorporate meditation-related practices have been shown to significantly improve behavior and stress management in children in the early years of elementary school (Bothe et al., 2014).

Zenner et al. (2014), in a meta-analysis of mindfulness meditation practices among schoolchildren, demonstrated improved cognitive performance and stress resilience in students who practiced meditation in a school setting. In the United Kingdom, children aged 7 to 9 participated in an eight-week mindfulness meditation training program, resulting in improved mood, as well as emotional control and executive functions such as planning and organization (Vickery & Dorjee, 2016). Starting in 2010, mindfulness meditation became part of the school curriculum for English children, following an initiative by the British Parliament to encourage and promote the practice (The Mindfulness Initiative, 2024).

In Korea, the study published by Kim et al. (2024) provides evidence of improved social-emotional skills and well-being among students following a mindfulness program implemented in schools in that country after the covid-19 pandemic. Similar results are reported by Milarè et al. (2025) in a study conducted in Brazilian schools with students aged 8 to 9 who underwent mindfulness training, resulting in self-regulation and the development of social-emotional skills.

Souza et al. (2020) point out that, in fact, despite its strong association with certain practices considered religious, the act of meditating promotes “self-control, recognizing oneself in the world, and allowing oneself to know and perceive oneself within the complexity of life” (p. 678), which can occur in the most diverse situations of our daily lives, such as dancing,

reading a book, or contemplating an image, among others, requiring a state of deep concentration and attention.

According to Sarroeira et al. (2022), methods related to meditation practices include different approaches and techniques; however, they are always grounded in a focus on the body, breathing, and relaxation, regardless of the approach used, and are empirically recommended for alleviating anxiety, distress, stress, and depression. These practices have historically been used from a therapeutic perspective, beginning with adults and later extending to children.

As reported by Flear and Hammer (2013), the development of emotional skills in an educational setting is a factor that contributes to learning and socialization. It is a process in which the awareness of emotions and their expression through feelings and attitudes occurs within social relationships; these relationships, being mediated by verbal language, are conceptualized (given meaning).

Such aspects related to affectivity, according to Wallon (2007) and Damasio (2012), encompass interconnected phenomena that are nonetheless distinct in nature: emotion is an immediate and intense response to a stimulus, involving physiological changes and bodily expression; a feeling is a reflection on the subjective experience of an internal state, a representation of the conscious body; therefore, it is more cognitive, as it involves the ability to identify and express what one feels. An attitude, on the other hand, is defined as a state of mind that inclines a person to react in a certain way to objects, situations, or people (Lines, 2005).

Vygotsky (2001) supports this view by arguing that feelings, emotions, and attitudes are not isolated or purely biological processes. They are part of the historical-cultural development of consciousness, always linked to thought, language, and social relations. Emotions may be more immediate and reactive, feelings involve greater symbolic elaboration, and attitudes require a conscious organization of behavior, resulting from the internalization of social relations.

Therefore,

human development consists of a dynamic and dialectical process of co-constructing meanings and significances within a given culture, and conceives of affections as hierarchically organized semiotic fields. (Wortmeyer et al., 2014, p. 293)

We believe that focusing on the emotional aspects intrinsically linked to intellectual, behavioral, and attitudinal learning objectives is of fundamental importance to fulfilling the

mission of providing a well-rounded education for school-age children and youth. Thus, studies on meditation interventions for children—particularly those in elementary school in Brazil—deserve attention, as they help shed light on their potential benefits.

The research described here was conducted at three schools participating in a project supported by the São Paulo Research Foundation (Fapesp), which began in mid-2019. The impact of the covid-19 pandemic in 2020 and 2021 led to a reorientation of some of the project's activities at the start of the 2022 school year. Upon returning to in-person classes, educators observed an increase in problems related to the socio-emotional attitudes of children and adolescents, such as discouragement, stress, sadness, disinterest, and agitation, far beyond what had been observed in previous years. Students' attitudes and behaviors—such as deficits in attention and concentration during routine school activities, as well as in the knowledge and learning they had already acquired before the suspension of in-person activities—became a major challenge.

In response to this situation, the administrative teams of the three schools requested that the university's research team develop a specific teacher training program focused on developing meditation practices to be implemented with the students. It is important to note that these schools were already participating in a Syntronic Environmental Education Training Program, in which Emotional Health Education is one of the core components. Thus, this study aimed to analyze the manifestations of students' feelings and attitudes in the context of meditative practices, as well as teachers' perceptions of the effects of these practices on learning.

Metodologia

The study combined qualitative and quantitative methods to strengthen its conclusions using textual-narrative data and frequency/proportion data, which allow for a statistical analysis approach (Souza & Kerbauy, 2017). As Santos Filho (1995) explains, these two types of approaches complement each other, especially in social studies where the data are complex. Using both methods together allows for a richer and more detailed analysis. Bauer et al. (2008) show that the qualitative component helps to better understand the phenomena under study, while the quantitative component provides an analysis of trends and patterns based on specific methodologies, drawing inferences about the researched situation.

As data collection tools, questionnaires were administered to all teachers and students at the three municipal schools in the interior of the state of São Paulo, as well as oral interviews with teachers during group meetings. It is important to note that the project was submitted to the Ethics Committee of Plataforma Brasil/Saúde under CAAE No. 33143320.0.0000.5411.

During 2023, 48 teachers who completed the first questionnaire and 1,083 elementary school students (1st to 5th grade) participated. Teachers from the participating schools received training on meditation practices over four weeks in the first semester of 2023, totaling 20 hours at each school, delivered by university researchers specializing in topics related to the fundamentals and practices of meditation.

The data collection tools consisted of: 1) administering a descriptive scale and emoji faces to students after two months of participating in meditation practices; 2) administering a questionnaire to teachers at the end of the second semester of 2023; 3) meetings with teachers during which verbal accounts were obtained regarding their perceptions of student learning.

The students' instrument was structured around eight emojis that are already widely recognized and culturally prevalent, as highlighted by Vygotsky (2001) when he noted that cultural signs play a mediating role in psychological development once they are integrated into an individual's social repertoire. The selected emotional categories were: joy, sadness, fear, love, curiosity, anger, peace, and sleep. Unlike graded scales, this is a nominal categorical scale, whose objective is to identify the predominant emotional state or the attitude perceived by the child in a given context. The emojis and their nominal descriptions were validated through standardized instructions, which presented each emoji and its simple, age-appropriate written definition to the group. Next, multiple-choice questions were presented, in which students indicated the word and corresponding emoji that expressed an emotion consistent with what they felt before, during, and after the meditation practices conducted at school.

A single-group analysis (Elementary School) was adopted based on the contingency coefficient (0.271) and Cramér's V (0.141), which indicated similar percentages in the distribution of feelings or attitudes across the different school years. The data from the descriptive scale and emoji faces were tabulated in Excel spreadsheets and statistically analyzed using the open-source software Jamovi (v. 2.6.13). The chi-square test was performed for parametric frequencies and Fisher's exact test for non-parametric ones, comparing pre-meditation and post-meditation frequencies in attitudes and feelings. The chi-square test assesses whether there is a statistically significant association between qualitative variables.

The questionnaire and the interviews with the teachers were guided by four open-ended questions designed to assess perceptions regarding the effects of meditation practices on knowledge, attitudes, and behaviors. These data underwent qualitative analysis, which involved interpreting responses to gain a deep understanding of the meaning and complexity of the collected data, exploring the richness of the participants' experiences and opinions (Minayo, 2012).

Results e discussion

The participating schools are located in a city in the interior of São Paulo with approximately 37,000 inhabitants (IBGE, 2022), situated in the central-western region of the state. The Municipal Human Development Index (IDHM) of 0.74 is considered high, and the municipality has a Municipal Basic Sanitation Policy (IBGE, 2017). The municipality has ten municipal schools serving Early Childhood Education and Elementary School, three of which were selected because they were already part of the study initiated in 2019, as noted earlier.

These three schools serve students in 1st to 5th grade of elementary school, with morning and afternoon sessions; two are located in the city center and the other in a more outlying area.

With regard to the study participants, Table 1 provides an overview of the number of students by grade and teachers at each of the schools where the interventions took place, for a total of 1,083 students across the five grades of elementary school.

Table 1
Distribution of survey participants

SCHOOL	YEAR/GRADE	TEACHERS	STUDENTS
1	1º	3	76
	2º	3	65
	3º	3	83
	4º	3	75
	5º	3	66
	Total		15
2	1º	3	62
	2º	3	74
	3º	3	67
	4º	3	77
	5º	3	58
	Total		15
3	1º	4	73
	2º	4	70
	3º	3	73

	4°	4	84
	5°	3	80
	Total	18	380
Grand total		48	1083

Note. Authors.

It can be observed that there is a certain balance between the number of students and teachers across the three schools, as well as in their distribution across grade levels. This helps to frame the statistical analysis of the data collected from the students, which was standardized and treated as a single group (Elementary School) representing each school.

It is important to note that all elementary school classes participated in the meditation sessions, as the three schools have incorporated this practice into their daily routines. School 1 officially launched a program titled “Relaxation Practices” within the school community, which was presented to the students’ guardians. In conversations with the teaching staff at the three schools, it was reported that the meditation practice was almost always conducted after recess, a time when the children were most restless, thereby helping to improve student discipline for academic work.

Manifestation of students’ emotional responses during meditative practices

Regarding the emotional responses elicited by participation in meditative practices, Table 2 presents the frequency of selection for each feeling or attitude listed on the descriptive emoji scale before and after the practices conducted by teachers in the classroom, with the data treated as a single group, as previously defined by Cramér’s V test and the Contingency Coefficient, which revealed a weak relationship in the series-affect contingency.

Table 2
Affects expressed by students during meditation sessions

AFFECT VARIABLE	PRE	POST	DIFFERENCE (%)	P-VALUE*	NORMALITY TEST**
Joy	473	314	↓ 33.6%	< 0.0001	Non-parametric (25.6 / < 0.0001)
Love	151	203	↑ 34.4%	0.020	Non-parametric (4.8 / 0.030)
Curiosity	140	63	↓ 55.0%	< 0.0001	Parametric (26.7 / < 0.0001)
Fear	23	15	↓ 34.8%	0.2404	Non-parametric (1.5 / 0.220)
Peace	382	554	↑ 45.0%	< 0.0001	Non-parametric (44.0 / < 0.0001)
Anger	101	47	↓ 53.5%	< 0.0001	Non-parametric (18.2 / < 0.0001)
Sleep	276	399	↑ 44.6%	< 0.0001	Non-parametric (20.0 / < 0.0001)
Sadness	75	42	↓ 44.0%	0.010	Non-parametric (8.0 / 0.005)

Note. Adapted from the open access software Jamovi (v. 2.6.13). *A p-value of < 0.05 was adopted as the significance threshold. A higher p-value indicates that the observed difference is more likely to be explained by chance; **Chi-square test for parametric distributions and Fisher's exact test for non-parametric distributions. Authors elaboration.

The results indicate that meditation practices are associated with an increase in feelings of love ($p = 0.020$) and a decrease in anger ($p < 0.0001$), sadness ($p = 0.010$), and joy ($p < 0.0001$). The reported self-perception of a peaceful attitude ($p = < 0.0001$) and sleep behavior ($p = < 0.0001$) also increased with meditation practices. Curiosity ($p = < 0.0001$), however, decreased in frequency. Self-perceived fear did not change between the pre- and post-practice periods ($p = 0.240$), perhaps because within the school, during that time interval, the children perceived themselves as safe, without identifying any threat during that time, indicating that meditation in the school context may not affect this feeling, which is considered one of the basic emotions (Spinoza, 2009).

Four emotions showed a decrease in scores between before and after the meditative practices (joy, curiosity, anger, and sadness); three showed an increase (love, peace, and sleep), and one showed no change between before and after (fear). It is important to understand that, in these changes in affect scores in the absolute numbers of responses for each item, the most frequently reported by the 1,083 students during the practices were joy, peace, sleep, and love. These last three showed a significant increase during the meditation practices and corroborate the expectation that meditation contributes to promoting feelings and attitudes of well-being (Vieira et al., 2022).

The increase in the sense of peace suggests that the meditative interventions were effective in promoting feelings of tranquility and calm among the participants. This reflects the

ability of meditative practices to reduce stress and induce a state of serenity (Vieira et al., 2022), a situation that can slow down metabolism and decrease sensory activity—states that precede sleep. Meanwhile, the heightened perception of the feeling of love, also evident in the students' responses, seems to indicate and corroborate the idea that positive affections—that is, those that increase the power of action, in the Spinozian sense—require a calm mind and a tranquil heart so that “love may be perceived and expressive of states of greater perfection or reality” (Spinoza, 2009, p. 104).

In contrast, the frequency of joy decreased significantly after the meditative interventions. This decrease in the joy item may indicate that relaxation occurred, and the feelings of excitement promoted by freer interactions among peers—common during recess breaks—were reduced during the meditative intervention. It is possible that the participants experienced a calmer and more static state, thus meaning less agitation, which may be interpreted by elementary school children as a decrease in joy. This understanding of being joyful as a state of warmer, more physical interactions was noted by the teachers in conversations during meetings. They explained that, in this age group, it is very common for a state of joy to be expressed during situations of excitement and play among peers.

Affects that produce well-being are considered active because they encourage an increase in the potency of actions throughout the human experience (Leal, 2022). This situation also enhances the development of basic psychological functions and those constructed within the context of cultural immersion (higher psychological functions), such as cognition, imagination, language, and verbal thought, among others, as described by Vygotsky (2001).

However, this premise has not been considered in the scientific field, as Damásio (2012) points out, and, at best, the field of emotions and affections has been viewed as entirely independent of reason, which has been a privileged factor in most disciplines and areas of science, including those dedicated to the study of the humanities, such as the field of education. Emotion has been considered a response to a specific situation that, in general, interconnects the body (physiological and/or psychological functions), reason (thought), and motor or nervous activity, with a significant impact on our quality of life.

According to Goleman (2012): “Each emotion represents a different predisposition for action. Each one points us in a direction that has previously proven successful in addressing the same type of problem” (p. 26). Ensuring the success of pedagogical practice and fostering a love of learning in children requires that the relationship between educator and child be built on the foundation of affectivity and the promotion of self-esteem, since intellectual and social

development is grounded in the organization of the educational environment—structured as a relational and reassuring space where the child is valued and listened to—which contributes to their well-being and self-esteem, with emotions playing a particularly prominent role.

Teachers' perceptions of the effects of meditation practices on learning

The Table 3 presents the results of the questionnaire administered to the teachers, which reflect their perceptions regarding aspects related to the acquisition of knowledge, behavior, and attitudes as outcomes of meditative practices.

Table 3
Teachers' perceptions of student learning

1. KNOWLEDGE	COUNTS	% TOTAL	% CUMULATIVE
Improved reasoning, learning, and reading	32	66.67%	66.67%
No	04	8.33%	75.0%
Other answers	12	25.0%	100%
2. BEHAVIOR	COUNTS	% TOTAL	% CUMULATIVE
Yes, their attention has improved	27	56,25%	56.25%
Yes, some students	07	14,58%	70.83%
No	06	12,50%	83.33%
Yes, but only for a short time	04	8,33%	91.66%
Still developing	03	6,25%	97.91%
Other answers	01	2,08%	100.0%
3. ATTITUDE	COUNTS	% TOTAL	% CUMULATIVE
Yes, more sociable and helpful	32	66.67%	66.67%
Still developing	07	14.58%	81.25%
Not significant	03	6.25%	87.50%
No	03	6.25%	93.75%
Other answers	03	6.25%	100.0%
4. REMARKS	COUNTS	% TOTAL	% CUMULATIVE
Helped the students	19	39.58%	39.58%
Teachers did not respond	15	29.25%	70.83%
Students liked it	06	12.50%	83.23%
Continue with the meditation practice	05	10.42%	93.65%
Provide guidance to parents on the meditation practice	02	4.17%	97.92%

Technology used at home gets in the way	01	2.08%	100.00%
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Note. Authors.

Regarding the learning priorities in the first stage of elementary school—which focuses particularly on the acquisition of the mother tongue and mathematical reasoning—nearly 70% of the teachers indicated that the practices contributed to these learning outcomes, as well as to the students’ ability to concentrate on their tasks. In addition, they reported that students became calmer and more tolerant, as well as showing interest in meditation, demonstrating greater willingness and receptivity to practice it.

In terms of behavior, which, according to Zabala (2014), involves both motor skills (cutting, drawing) and cognitive skills (observing, responding), more than half of the teachers reported an improvement in the children’s attention to the proposed activities, whether in the classroom or outside of it.

In relation to attitudes, the teachers noted an improvement in socialization among students, and nearly 70% responded that the students had become more sociable and helpful.

In their pedagogical interactions with students, teachers created opportunities aimed at developing and enhancing attitudes and learning through the discussion of specific knowledge. Thus, a topic and/or skill to be developed in the classroom requires not only the presentation of a concept or knowledge but also the ability to capture students’ attention and interest, leading to reflective actions (attitudes) and their connections to other acquired knowledge (Spazziani et al., 2022).

For pedagogical mediations to be successful and result in the attitudes expected by teachers from students, it is necessary not only to master the subject and the concept/knowledge but also to understand how these will affect their students. To this end, teachers can further familiarize themselves with knowledge regarding affectivity in education and put it into practice in daily school life (Leite, 2012).

Considering that all knowledge production is a process that arises from the relationship established between the subject (student), the object (subject matter), and the mediator (teacher), we can say that these relationships are markedly affective. That said, these relationships can be positive (stimulating curiosity) or negative (stimulating disinterest) depending on how the subject relates to the object and the manner in which the mediator carries out pedagogical mediation.

Therefore, pedagogical mediations must be carefully studied with the impacts of the relationships to be established in mind, as it is understood that, depending on how the subject is affected by the mediator who approaches the object in different ways, contrasting attitudes may arise, such as love or hatred for the subject itself and even for the mediator (Leite, 2012).

According to Leite and Tagliaferro (2005), the teacher, by fostering an optimal and productive relationship between the subject-object-mediator, engages students and promotes situations of well-being through their active affections, contributing to the diverse learning outcomes desired for the overall development of children and young people.

Final considerations

Meditative interventions had distinct effects on the various emotional states investigated. These results suggest that, although these practices may reduce feelings of excitement and euphoria (joy), they are highly effective in promoting a state of calm and serenity (peace). The differences observed in the frequencies and the statistical significance of the results highlight the importance of meditation techniques in modulating emotional states, specifically in increasing inner peace, reducing euphoria, and enhancing the expression of feelings of love.

Meditative practices contributed to the students' concentration, reasoning, and knowledge related to reading and readiness to perform tasks, as well as leaving them calm and at ease.

The results regarding socialization were evident in the classes that participated in the meditative practices, and some of the teachers reported that many students request time for these practices when, for some reason, the teacher does not offer them.

The teachers also shared some important observations about meditation practices in the learning process, suggesting their continuation at school, as well as guidance on these practices for the students' parents and/or guardians. They also reported that the often excessive use of technology in students' homes has hindered children's studies and interest in standard educational resources (books, notebooks, among others) commonly used in teaching practices.

Teachers may face challenges regarding awareness of their perceptions and pedagogical decision-making, which may be flawed and require adjustments. Therefore, pedagogical interventions require pedagogical decisions to achieve better outcomes regarding students'

attitudes and learning, which influence the feelings expressed by students. And these, in turn, may or may not enhance the multiple dimensions of expected school learning.

For this reason, an increasing number of studies providing data on pedagogical decisions and teachers' perceptions of them are of great value for understanding the influences of emotions on learning, confirming what was highlighted by Damásio (2012), Fleer and Hammer (2013), Vygotsky (2001), and Wallon (2007) when addressing the relationship and contribution of emotional and affective aspects to learning and socialization.

Therefore, school education, as one of the fundamental pillars of human development, must be understood as a dynamic and dialectical process of co-constructing meanings and significances within the context of a given culture, and must conceive of the dimension of affect as hierarchically organized semiotic fields of enormous relevance in the constitution of human beings (Wortmeyer et al., 2014).

School education, in this sense, encompasses the overall formation of students through the appropriation of meanings historically attributed to scientific, artistic, and cultural knowledge, among others, intrinsically linked to the meanings arising from the bio-organic-cultural-ecological-emotional conditions experienced by students in their life context. This requires the incorporation of studies and strategies that have long been disseminated by numerous Brazilian researchers but which, for the most part, remain on the margins of regional or national public policies governing the operation of schools and teacher training.

Thus, it is important to consider other studies of this nature that can strengthen the integration of emotional health into the school curriculum, promoting more effective, supportive, and welcoming learning environments.

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 - **Author's contributions:** Maria de Lourdes Spazziani (administration, coordination, and revision); Nijima Novello Rumenos (conceptualization, data analysis, writing, and revision); Eliane Aparecida Toledo Pinto (methodological design, data analysis, and manuscript preparation); Giuliano Citrini Stipkovic (statistical analyses, construction, and interpretation of results); Juliana Irani Fratucci De Gobbi (theoretical and methodological design, data analysis, and manuscript preparation); Carla Gheler-Costa (analysis and interpretation of results, drafting, and critical review of the original manuscript); João Lucas Piubeli Doro (research, theoretical references, and manuscript preparation).
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