O MUNDO DA SAÚDE

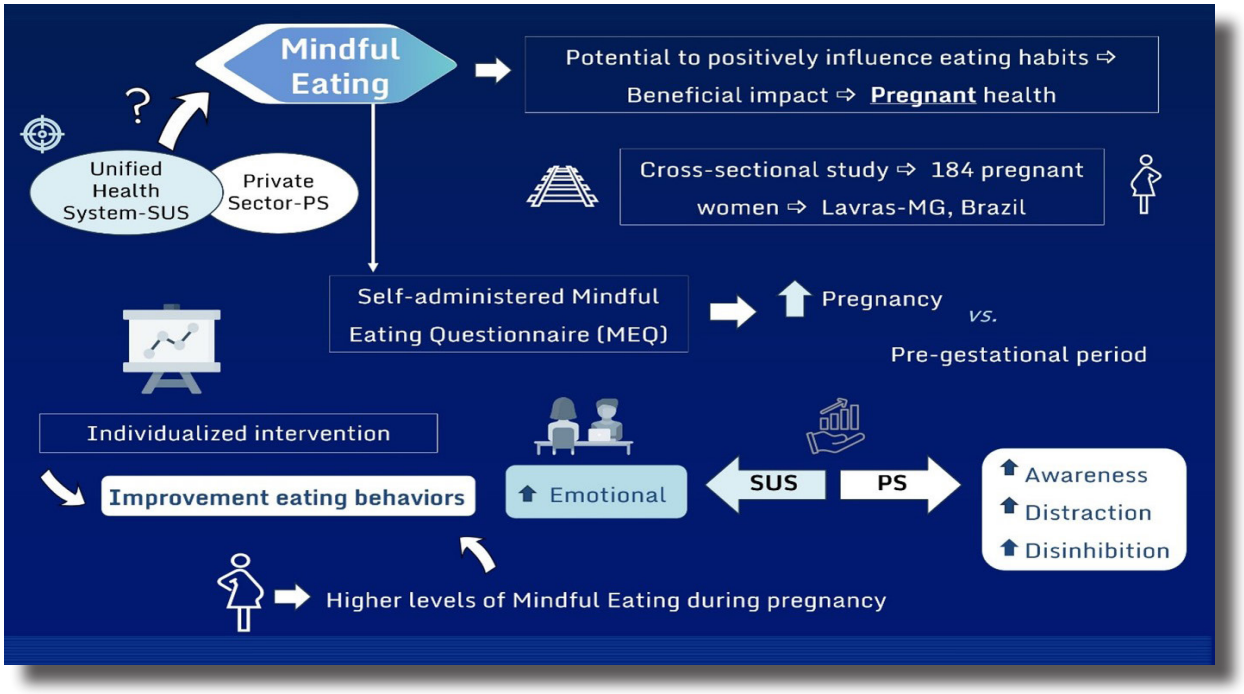
DOI: 10.15343/0104-7809.202448e15812024I

Mindful eating during pregnancy: a comparative study according to prenatal care

Maria Luiza Prado Sant'Anna[1,2] **Lahis Cristina Morais de Moura**[1,3] **João Paulo Lima de Oliveira**[1]
Lydiane Bragunci Bedeschi[4] **Nathália Stahlschmidt Petry**[5] **Nathália Luíza Ferreira**[6] **Lílian Gonçalves Teixeira**[7]

Programa de Pós-Graduação em Nutrição e Saúde, Departamento de Nutrição, Universidade Federal de Lavras – UFLA. Lavras/MG, Brasil.
[2]Centro Universitário Vale do Rio Verde – UNINCOR. Três Corações/MG, Brasil.
[3]Faculdades Integradas de Três Lagoas - AEMS. Três Lagoas/MS, Brasil.
[4]Universidade de Coimbra- UC. Coimbra, Portugal.
[5]Universidade Federal de Santa Catarina – UFSC. Florianópolis/SC, Brasil.
[6]Universidade Federal de Minas Gerais – UFMG. Belo Horizonte/MG, Brasil.
[7]Departamento de Nutrição, Universidade Federal de Lavras – UFLA. Lavras/MG, Brasil.
E-mail: malupradosantanna@gmail.com

Graphic Abstract



Abstract

Changes in the global lifestyle have led to dysfunctional eating behaviors during pregnancy. In this sense, the Mindful Eating approach is a practice with the potential to positively influence eating habits, with a beneficial impact on the health of pregnant women. To evaluate the levels of Mindful Eating of women before and during pregnancy and to associate them with the type of prenatal care (Unified Health System or Private Sector), a cross-sectional study was conducted with 184 pregnant women aged ≥18 years, accompanied by the Unified Health System (SUS) or the Private Sector in the municipality of Lavras-MG, Brazil. Socioeconomic and obstetric data were collected, and information on Mindful Eating was obtained through the self-administered Mindful Eating Questionnaire. Mindful Eating was higher during pregnancy than during the pre-gestational period. Pregnant women assisted by SUS showed lower Mindful Eating compared with women in the private sector. Those attended by SUS obtained higher values during the gestational period in the Emotional subscale. Pregnant women who attended in the private sector obtained higher values during the gestational period in the Awareness, Distraction and Disinhibition subscales. During pregnancy, women presented higher levels of Mindful Eating, indicating an improvement in eating behavior. The Mindful Eating score of women attended in prenatal care by the Private Sector was higher than that of women attended by SUS, requiring individualized intervention in each sector to cover the socioeconomic factors inherent to each group and their influence on the improvement of eating behaviors.

Keywords: Mindfulness. Pregnancy. Prenatal Nutrition. Health Systems.

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INTRODUCTION

The gestational period is marked by several physical, hormonal, cultural and psychosocial changes that influence eating behavior. This comprises a series of cognitions and affects related to eating behaviors. Among the numerous factors involved in the food context, the concept of "Mindful Eating" stands out[1].

Mindful Eating refers to eating that can satisfy physiological needs and the pleasure of eating, paying attention in a particular way to the present moment, without any judgment. In addition, this approach values a greater connection with the body's needs and a deeper understanding of hunger and satiety signals, perceiving which emotions arise associated with eating[2,3].

The practice of Mindful Eating can result in a series of benefits for the pregnant woman's health, helping in the management of the emotional fluctuations characteristic of this period. In addition, it contributes to the reduction of stress, depression, anxiety, and negative feelings, enabling a more balanced and healthy relationship with food[4,5]. Some studies have shown that Mindful Eating is also effective in reducing emotional eating and food cravings in the general population[6,7], which can be especially relevant in the last gestational trimesters, when these aspects are more prevalent[8].

For a holistic understanding of eating behavior during the gestational period, it is essential to consider the whole context in which the pregnant woman is inserted. Thus, it is crucial to consider the social aspects that can affect adherence to nutritional guidelines, such as the level of education, which can directly influence eating behavior and, consequently, the health of the pregnant woman and the baby[9,10]. In Brazil, social inequalities also extend to the type of prenatal care, which makes it even more relevant to conduct research on nutritional care in the context of health systems[11].

Considering the relevant role of maternal nutrition in the gestational period, the objective of this study was to evaluate the levels of Mindful Eating in women during the pre-gestational and gestational periods, associating them with the type of prenatal care performed by the Unified Health System and the Private Sector. The aim of this study is to provide a scientific basis for the creation of new perspectives for a differentiated nutritional approach and intervention to prioritize the improvement of eating behavior and the health of the mother-child binomial.

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METHODS

This study is part of a prospective project entitled "Assessment of Nutritional Status, Behavior and Feeding Practices in the Phases of Pregnancy, Lactation and Food Introduction" (CAGesLact) developed by the Federal University of Lavras (UFLA). The present work is a cross-sectional study conducted with pregnant women attended by the Unified Health System (SUS) and Private Sector of the municipality of Lavras-MG, Brazil. Participation was conditioned to the signing of the Informed Consent Form. The project was approved by the UFLA Ethics Committee under Opinion 3.362.629. The research was carried out by a previously trained team, in an individualized way and with the care to avoid embarrassment of any kind.

Study population

The sample collection used proportional stratified planning between the participants of the Family Health Strategies (ESFs) and the private offices. According to the National Survey on Delivery and Birth-Born in Brazil[12] in the Southeast region, 15.4% of women have their children in private care and 84.6% are born at SUS[13]. We attempted to maintain this proportion in this study. The sample size calculation, carried out for the base project, was done with the help of the Statcalc program of the Epi Info 7.2 software, considering the average of live births in Lavras in the years 2013 to 2017 (n = 1,396), the prevalence of 5.5%[14] of pregnant women with excessive concern about body weight with 5% accuracy and 95% confidence interval, resulting in a minimum sample size of 76 pregnant women. Due to the possibility of sample losses, the sample size was increased by 40%[15]. Thus, a sample of 107 pregnant women would be required. It is emphasized that for this study, the sample size is sufficient, considering the sample calculation of the prospective study.

Two hundred pregnant women residing in the municipality of Lavras - MG participated in the study. Recruitment occurred randomly and in person in the waiting rooms of the prenatal care. Eligible women were aged ≥18 years, with no medical diagnosis of psychiatric disorder of any kind or eating disorders. Data from women who did not complete all the information of interest in the questionnaire were considered sample losses.

Procedures

The participants were invited for an interview during the waiting period for the prenatal follow-up consultations, in which socioeconomic, clinical and obstetric information were collected. Data collection occurred between July 2019 and February 2020 (pre-COVID-19 pandemic period). The interview duration varied from 35 to 55 min.

Socioeconomic, obstetrics, and anthropometric characteristics

Information on age (years), marital status (single, stable union, married or divorced), education (up to incomplete high school; complete high school; complete higher education or more), and current income (<1 minimum wage-MW; 1-2 MW; 2-3 MW and >3 MW) were asked. For income, the average annual value used as a reference for the MW was R$ 998.00 (2019, July: US$264.00; 2020, February: US$229.00.).

Data related to clinical and obstetric issues, such as date of last menstruation (DLM), pregnancy planning, gestational age (weeks), pre-gestational and gestational weight (collected from the Pregnant Woman's Booklet) document recommended in Brazil for pregnancy follow-up, when available, or self-reported) were collected. For adult pregnant women, the pre-gestational Body Mass Index (BMI) was classified according to the parameters of the World Health Organization[16] and the gestational weight was evaluated according to the gestational weeks, according to the criteria proposed by the Institute of Medicine[17]. The pre-gestational weight of

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pregnant women aged between 18 and 19 years was classified using the specific BMI/Age curve for adolescents[18].

Evaluation of the Mindful Eating Questionnaire (MEQ)

To evaluate Mindful Eating, the Mindful Eating Questionnaire (MEQ) was self-answered. The data were collected only once per participant, and the woman should fill in the data referring to the gestational and pre-gestational periods. The MEQ is a self-report questionnaire composed of 28 items that assesses 5 (five) domains of mindful eating: I. Disinhibition, which means stopping eating when feeling full; II. External, which refers to eating in response to environmental factors; III. Awareness, which refers to being present at the time of the meal, perceiving the sensory aspects of food and how they affect internal states; IV. Emotional Response, which is eating in response to negative emotions; V. Distraction, which is related to the tendency to pay attention to other unrelated factors at the time of eating (such as thinking about other subjects and eating fast)[3]. The version used in this study was the one translated into Portuguese by Santos[19].

Each subscale of this questionnaire is scored from 1 (one) to 4 (four), where 1 refers to "never/almost never" and 4 to "almost always/always" and the higher scores mean greater mindfulness in eating and better behaviors in the subscales[20]. The Emotional and Distraction subscales, in addition to the five questions in the Disinhibition subscale, have reverse scores[3]. The score of each subscale is the sum of the values obtained (according to the score of each question) divided by the number of questions answered. The summarized global score is the sum of the average scores of each subscale divided by 5 (total number of subscales).

Statistical analysis

The data were tabulated, doubly entered, and validated using Epi Info software, version 7.2, and data analysis was performed using Statistical Pac Sciences (SPSS) software, version 20.0.

Initially, a descriptive analysis of the data was performed, with an evaluation of the socioeconomic, clinical, and obstetric factors. The categorical variables are presented in the form of absolute frequency (n) and relative (%).

The paired t-test was performed to compare the global MEQ score of the global population in the pre-gestational and gestational periods. Next, stratified analysis was performed according to prenatal care (Unified Health System and Private Sector) ($p < 0.05$).

In addition, to compare SUS and Private Sector, an independent t-test was performed to evaluate the five categories of the MEQ (Awareness, Disinhibition, Distraction, Emotional and External) and the summarized global score ($p < 0.05$).

RESULTS

Of the 200 women who participated in the study, 184 had all the data of interest complete, totaling a sample loss of 8%. In total, 73.3% were receiving care from the Unified Health System, 46.2% of the participants were married, 47.8% completed high school, and 48.9% received between 1 and 2 MW. The participants were between 18 and 42 years old, and the gestational age ranged from 4 to 40 weeks. Most (63.5%) did not plan the pregnancy. The average pre-gestational BMI was 25.4 kg/m^2, with 47.3% classified as overweight or obese before pregnancy. As for gestational BMI, 50.6% were classified as overweight or obese, 32.8% as eutrophic, and 16.7% as underweight.

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Table 1 - Sociodemographic and obstetric characterization of pregnant women living in the city of Lavras, MG.

Variables (n)	n (%) or Mean + SD
Age–Years	**27.83 ± 6.15**
The type of service	
Private Sector	49 (26.6%)
Unified Health System	135 (73.3%)
Skin color	
White	57 (31%)
Black	40 (21.7%)
Brown	86 (46.7%)
Indigenous	1 (0.5%)
Marital Status	
Single	62 (33.7%)
Stable Union	32 (17.4%)
Married	85 (46.2%)
Divorced	5 (2.7%)
Education	
Up to High School (incomplete)	54 (29.3%)
High School (Completed)	88 (47.8%)
Higher education (completed) or above	42 (22.8%)
Income	
Less than 1 MW	31 (16.8%)
1 to 2 MW	90 (48.9%)
2 to 3 MW	18 (9.8%)
Above three MW	45 (24.5%)
Gestational Age: weeks (183)	**27.63 ± 6.05**
Gestational Trimester (182)	
First Trimester	34 (18.7%)
Second Trimester	75 (41.2%)
Third Trimester	76 (30.1%)
Planned Pregnancy (181)	
No	115 (63.5%)
Yes	66 (36.5%)
Pregestational BMI (176): kg/m²	**25.4 ± 6.1**
Pregestational BMI classification (176)	
Underweight	13 (7.4%)
Eutrophic	80 (45.5%)
Overweight	50 (28.4%)
Obesity	33 (18.8%)
Gestational BMI (175): kg/m²	**27.63 ± 6.05**
Gestational BMI classification (174)	
Underweight	29 (16.7%)
Eutrophic	57 (32.8%)
Overweight	48 (27.6%)
Obesity	40 (23%)

Note: Some data could not be obtained for all pregnant women. Therefore, some variables have variable "n", which is indicated in parentheses.
BMI: Body Mass Index (Kg/m²).

Sociodemographic and obstetric characterization of pregnant women living in the city of Lavras–MG. Source: own authorship, 2020.(continue).

In the general population, Mindful eating was higher during the gestational period (2.67 ± 0.35; p = 0.002), as well as in the subscales Awareness, Disinhibition, Emotional, and External (p <0.05).

When the analysis was stratified by the place of prenatal care, the women who were attended by SUS obtained significantly higher global MEQ scores in the gestational period (2.64 ± 0.35) compared with the period that preceded the gestation (2.59 ± 0.34; p = 0.00). In addition, the scores were higher specifically in the Emotional subscale (p = 0.043). In the subscales Awareness, Disinhibition, and External, the score was higher in the period before gestation (p <0.05). Regarding the pregnant women attended by the Private Health Sector, they obtained significantly higher global MEQ scores in the gestational period (2.77 ± 0.34) than in the gestational period (2.66 ± 0.32; p = 0.002). As for the subscales, the domains that had the highest score in the gestational period were Awareness, Distraction, and Disinhibition (p <0.05) (Table 2).

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Table 2 - Comparison of global scores and domains of the Mindful Eating Questionnaire (MEQ) in the pre-gestational and gestational periods, in relation to the total population and stratified by place of prenatal care.

	Total (184)			SUS (135)			Private (49)		
Variables	Pre-gestational (184)	Gestational	P	Pré-gestational (135)	Gestational	P	Pré-gestational (49)	Gestational	P
Global Score	2.60± 0.33	2.67± 0.35	0.002*	2.59± 0.34	2.64±0.35	0.000*	2.66± 0.32	2.77± 0.34	0.002*
Awareness	2.51± 0.65	2.62± 0.65	0.000*	2.89± 0.64	2.47±0.64	0.000*	2.63± 0.66	2.77± 0.34	0.002*
Distraction	2.69± 0.76	2.73± 0.75	0.107	2.84± 0.74	2.79±0.76	0.729	2.40± ,.74	2.52± 0.71	0.015*
Disinhibition	2.78± 0.65	2.86± 0.65	0.002*	2.82± 0.63	2.77±0.64	0.029*	2.80± 0.73	2.93± 0.68	0.021*
Emotional	2.83± 0.72	2.90± 0.71	0.022*	2.17± 0.74	2.75±0.71	0.043*	3.07± 0.64	3.13± 0.70	0.085
External	2.20± 1.72	2.25± 0.76	0.031*	2.64± 0.72	2.11±0.75	0.024*	2.44± 0.69	2.47± 0.73	0.490

Note: SUS: Unified Health System. Paired t-test. Values in asterisks indicate p<0.05.

During the pre-gestational period, women who attended the Unified Health System and those who attended the Private Sector presented similar levels in the Global Score of Mindful Eating. However, the Private Sector obtained a significantly higher score in the Emotional and External subscales (p = 0.009 and p = 0.006, respectively), suggesting that these women eat less in emotional and environmental responses. Pregnant women attending the Unified Health System scored higher than pregnant women attending the Private Sector in the Distraction subscale (p = 0.02) (Table 3), suggesting that these women pay less attention to unrelated aspects at the time of the meal, being more present to the act of eating.

During the gestational period, women in the private sector obtained a higher Global Score (p = 0.031). The scales with significantly higher scores by the population attended by the Private Sector compared to the one attended by the Unified Health System were Emotional and External (p> 0.05). Pregnant women attended by the Unified Health System obtained a significantly higher result in the Distraction scale (p = 0.025) than those attended in private care (Table 3).

Table 3 - Score of the global scores and domains of the Mindful Eating Questionnaire (MEQ) during pre-gestation and gestation, comparing women attended during prenatal care in the Unified Health System and in the Private Sector.

	Pre-gestational			Gestational		
Variables	Private (49)	SUS (135)	P	Private (49)	SUS (135)	P
Global Score	2.66 ± 0.32	2.58 ± 0.34	0.135	2.77 ± 0.34	2.64 ± 0.35	0.031*
Awareness	2.63 ± 0.66	2.46 ± 0.64	0.119	2.78 ± 0.67	2.57 ± 0.65	0.063
Distraction	2.40 ± 0.74	2.79 ± 0.74	0.002*	2.52 ± 0.71	2.81 ± 0.76	0.025*
Disinhibition	2.80 ± 0.73	2.77 ± 0.63	0.787	2.94 ± 0.68	2.84 ± 0.64	0.385
Emotional	3.07 ± 0.64	2.75 ± 0.74	0.009*	3.14 ± 0.70	2.83 ± 0.71	0.009*
External	2.44 ± 0.69	2.11 ± 0.72	0.006*	2.47 ± 0.73	2.17 ± 0.76	0.016*

Note: SUS: Unified Health System. Independent t-test. Values in asterisks indicate p <0.05.

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DISCUSSION

In this study, higher Mindful Eating scores were observed during pregnancy compared with those during the pre-gestational period. One hypothesis raised is that due to the greater concern with food and health, due to the fact of generating a life, the woman seeks healthier habits, dedicating more time to preparing food, eating more calmly and tranquility, experiencing better the feeling of hunger and satiety, and establishing a better connection with the body[21].

In addition, women during pregnancy, when compared to the pre-gestational period, obtained higher scores on the Awareness, Distraction, and Disinhibition subscales, indicating that during this period, women pay more attention to the sensory aspects of food, distract themselves less with unrelated issues at the time of feeding, and pay better attention to the signs of hunger and satiety.

Pregnancy is a relatively short period, but with intense changes. In addition to body and hormonal changes, changes in food choices tend to occur[1]. The increase in Mindful Eating levels may reflect a greater attention of the woman to her hunger and satiety signals, a greater connection with her own body, being more attentive to body and behavioral changes, and feeling more confident[22,23]. The nausea itself, which is very frequent in pregnancy, and the changes in sensory perceptions, such as smell and taste, can intensify the change in preferences and modification of eating behavior[6,7].

A difference was observed in the Mindful Eating categories between pregnant women who received different types of health care. Women attended by the Private Sector presented significantly higher levels of mindful eating than pregnant women attended by the Unified Health System, both in the preconception period and during pregnancy. Because they have a different socioeconomic profile, it was expected that these two populations would obtain different results[11].

Studies indicate that inhabitants of municipalities with greater income inequality are negatively influenced in relation to hopes for the future, being less susceptible to concern for well-being, stress, and little hope in the possibility of changing the standard of living, which influences the choices and health of women[9,10]. These factors interfere with the relationship with food and may be one of the explanations for the worsening of the other Mindful Eating categories among pregnant women attended by the Unified Health System, since pregnancy tends to imply greater concerns related to income.

Mindful eating strategies can be beneficial during pregnancy, offering a moment of learning and adopting new long-term eating habits, which allows the woman to develop a new perspective on food[24], promoting healthier eating and reducing food cravings[20]. Several studies indicate that short-term Mindful Eating-based interventions provide significant improvements in stress management, in addition to contributing to greater food self-control during pregnancy, acting in the management of food excesses during this period[4,21,25,26].

The results presented here should be interpreted taking into account some limitations. One can consider the potential memory bias because the questions about the pre-gestational period referred to a phase before the one in which the pregnant woman was living. However, in the context of this research, it would be unfeasible to study a sample of women in the preconception period, given that, according to the socioeconomic characterization of this work, 63.5% of pregnant women did not plan the pregnancy, which would imply a reduced sample size. In addition, there was no stratification of pregnant women based on the trimester in which they were in, although there may be changes in eating behavior in each gestational trimester. Thus, future studies linked to the Research Project will study changes in eating behavior by trimester.

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Regardless of the type of care, mindful eating levels are influenced by various other factors, such as socioeconomic conditions, lifestyle, individual values, working conditions, stress level, support network, family conditions, nutritional status, health conditions, and sleep quality[2,11,27]. In this sense, considering that, in general, individuals assisted by SUS have worse socioeconomic conditions than those with access to private health services[28], it would be expected that pregnant women assisted by SUS would have lower mindful eating scores, a perspective corroborated by the results of the present study.

This study presents as a differential the very theme related to eating behavior, a field whose study began to be deepened recently, being one of the first works on mindfulness during the gestational period, using the MEQ questionnaire. In our research, we found three studies that used the questionnaire in a population of pregnant women with obesity[29–31] and one study that evaluated the potential of stress and weight gain in pregnant women with low income, using the MEQ[27]; however, none of these studies were conducted in Brazil. It is emphasized that no studies have compared the levels of Mindful Eating according to the type of prenatal care assistance, considering different socioeconomic conditions.

CONCLUSION

During the gestational period, it was observed that women ate more consciously. Regarding the type of prenatal care, women attended by the Private Sector presented higher levels of Mindful Eating since the pre-gestational period. Strategies focused on eating behavior encompassing the whole context and the feelings that food provides should be prioritized.

ACKNOWLEDGMENTS

We would like to thank the participants who offered their time to participate in this research; in addition, we would like to thank the organizations and individuals who helped in recruitment.

CRediT author statement

Conceptualization: Sant'Anna, MLP; Moura, LCM; Teixeira, LG. Methodology: Sant'Anna, MLP, Moura; Bedeschi, LB; Petry, NS; Teixeira; LG. Validation: Sant'Anna, MLP; Moura, LCM; Teixeira, LG. Statistical Analysis: Sant'Anna, MLP; MLP, Moura; Teixeira, LG. Investigation: Sant'Anna, MLP; Moura, LCM; Teixeira, LG. Writing - Original Draft Preparation: Sant'Anna, MLP. Writing - Review & Editing: MLP, Moura; Oliveira, JPL; Bedeschi, LB; Petry, NS; Ferreira, NL; Teixeira, LG. Supervision: Sant'Anna, MLP; Oliveira, JPL; Ferreira, NL; Teixeira, LG. Project Administration: Teixeira, LG.

All authors have read and agreed with the published version of the manuscript.

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DOI: 10.15343/0104-7809.202448e15812024I

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DOI: 10.15343/0104-7809.202448e15812024I

Received: 19 january 2024.
Accepted: 10 may 2024.
Published: 24 may 2024.