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Nursing assessment in cardiovascular rehabilitation: manifestations of the subject dimension

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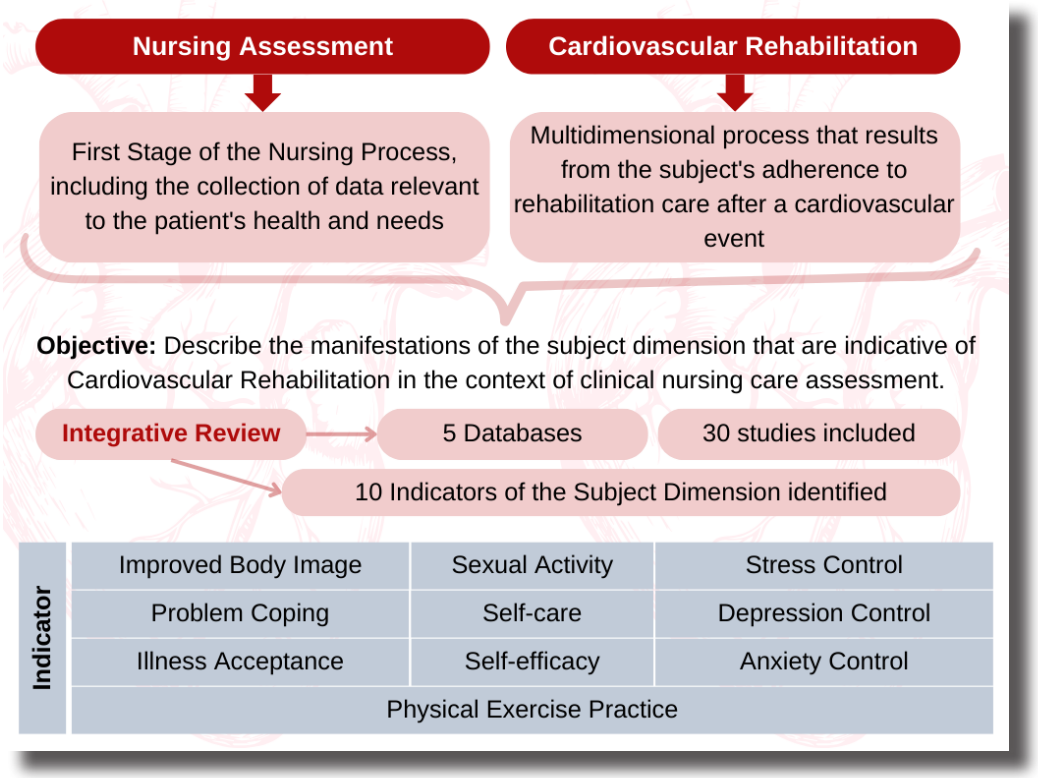
Graphical abstract



Highlights

- *The Subject Dimension of Cardiovascular Rehabilitation deals with the manifestations expressed by the individual that indicate their rehabilitation.*
- *The components of this dimension are: physical conditioning, psycho-emotional situations and health behaviors.*
- *The Nursing Assessment in Cardiovascular Rehabilitation must contemplate the markers expressed by the components of this dimension.*

Abstract

Nursing Assessment is an important step in the Nursing Process within the context of Cardiovascular Rehabilitation. The use of measurement instruments to support this activity, such as the Cardiovascular Rehabilitation Measurement Scale, is essential to ensure that interventions are aligned with the patient's actual needs, considering all dimensions involved in the phenomenon. Therefore, this study aimed to describe the manifestations of the subject dimension that are indicative of cardiovascular rehabilitation (CR), in the context of clinical nursing care assessment. This is an integrative review, conducted between April and September 2022, guided by the following research question: "What are the essential elements/indicators of CR in the context of clinical care?" Data collection was carried out in five databases, resulting in a final sample of 30 studies. The indicators of the subject dimension were organized into the subdimensions of physical conditioning, psycho-emotional situations, and health behaviors, referring to the set of aspects manifested by the individual themselves that are indicative of the effectiveness — or lack thereof — of their rehabilitation process. By clarifying this dimension, it becomes possible to conduct an appropriate evaluation of nursing care in CR programs or processes, considering biological, psycho-emotional, and behavioral factors.

Keywords: Cardiac Rehabilitation. Cardiovascular Nursing. Nursing Assessment.

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INTRODUCTION

The Nursing Process (NP) is characterized as a method that guides the nurse's critical thinking and clinical judgment, being structured into five interrelated, interdependent, recurrent, and cyclical stages. Nursing Assessment is considered the first of these stages, encompassing the collection of data relevant to the health and needs expressed by the patient, the family, the community, and special groups[1].

In this context, the use of care measurement instruments is considered relevant to ensure the effectiveness of the assessment carried out by the nurse. These instruments allow interventions to be monitored and measured, enabling the identification of priority care demands, which supports the organization of the nursing team's work process[2].

Thus, such assessment instruments are necessary in cardiovascular rehabilitation (CR) care, given the complexity involved in the interventions provided to individuals with heart diseases[3]. This therapeutic approach is defined as a multidimensional process influenced by the social context, resulting from the subject's adherence to a set of rehabilitative care measures made available after a cardiovascular event[4]. These rehabilitative interventions have proven effective in reducing mortality from cardiovascular diseases (CVD), and they also support the management of risk factors[3].

Until recently, there was no instrument capable of measuring CR beyond its physiological dimension. In this regard, the *Cardiovascular Rehabilitation Measurement Scale* is under development[4], to be used in Nursing Assessment. According to psychometric frameworks, the initial stage in its development involves establishing the theoretical dimensionality attributed to the phenomenon. A previous study identified four dimensions of CR: rehabilitative care, subject, therapeutic adherence, and social[5].

Rehabilitative care refers to the interventions provided to the patient undergoing rehabilitation; the subject is the protagonist of the phenomenon, to whom care is directed; therapeutic adherence relates to the analysis of behaviors and attitudes displayed by the subject toward the care provided; and the social dimension refers to the support systems available at a given time[5]. The interdependence of these dimensions reinforces the complexity of the phenomenon and highlights the need for theoretical deepening of each one before the *Cardiovascular Rehabilitation Measurement Scale* can be validated, as the instrument is based on this categorization.

Therefore, the objective of this study is to describe the manifestations of the subject dimension that are indicative of CR in the context of clinical nursing care assessment.

METHODOLOGY

This is an integrative review conducted between April and September 2022. To formulate the guiding question, the PICO strategy was used, in which "P" stands for Population: individuals undergoing cardiovascular rehabilitation (CR); "I" for Interest: clinical care in CR; "C" for Comparison: not applicable; and "O" for Outcome: essential elements/indicators of CR. Accordingly, the guiding question was: "What are the essential elements/indicators of CR in the context of clinical care?".

In order to include the largest possible number of studies on the topic, a single descriptor from the Health Sciences Descriptors (DeCS) was used: "Cardiovascular Rehabilitation," in the following databases: Medical Literature Analysis and Retrieval System Online via PubMed (MEDLINE/PubMed), Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), Base de Dados em Enfermagem (BDENF), Scopus, and Web of Science. Data collection took place on April 24, 2022.

Initially, 1,975 studies were identified, with inclusion criteria limited to those published from January 2005 onward, given the release of the first Brazilian guideline on CR[6]. Duplicates and documents not available in full were excluded. The Rayyan software was used to ensure the organization and management of references.

After screening, 850 articles were assessed based on the title and abstract to identify potential studies relevant to the guiding question. In the end, 144 articles were selected for full-text reading, resulting in 64 publications that addressed the objective of the study.

From the analysis of these 64 publications, 19 CR indicators were extracted and grouped by similarity into nine subdimensions, which were then ca-

tegorized into four dimensions: "Rehabilitative Care," "Subject," "Therapeutic Adherence," and "Social."

The definitions both constitutive and operational of each of the phenomenon's indicators were clarified and published in a previous study[5]. It is important to note that this integrative review was developed to support the construction of the *Cardiovascular Rehabilitation Measurement Scale*[4], based on psychometric assumptions. For this reason, the scale's dimensions reflect those identified in the literature review.

Additionally, this study presents exclusively the findings related to the Subject dimension, which were identified in 30 publications. Data were collected using an instrument developed by the authors, which included the following variables: study title, year of publication, country, CR indicator, and characteristics of the indicator. Each indicator of the Subject dimension referred to manifestations expressed by the individual themselves that indicate their rehabilitation status and should be considered by the nurse in the context of nursing care assessment. The findings were discussed in light of the current scientific literature.

RESULTS

Table 1 presents the characterization of the studies included under the Subject Dimension attributed to Cardiovascular Rehabilitation (CR).

The characterization of the studies reveals that 60% (18) of the publications were produced within the last five years of the selected time frame (2018–2022). Additionally, it is noteworthy that 50% (15) of the investigations were conducted in the Americas, 36.7% (11) in Europe, and 13.3% (4) in Asia.

The identified indicators were organized into the subdimensions of physical conditioning, psycho-emotional situations, and health behaviors, referring to the set of aspects manifested by the individual themselves that are indicative of the effectiveness — or lack thereof — of their rehabilitation process. Figure 1 presents the theoretical dimensionality attributed to the phenomenon.

Table 1 - Characterization of the included studies, according to title, journal of publication, year, country of origin, and identified cardiovascular rehabilitation indicators.

N	Title	Year	Country	CR Indicators
1	Clinical and nutritional progression of a patient undergoing 23 months of cardiovascular rehabilitation[7]	2009	Brazil	Physical exercise practice
2	Lack of supervision after home-based cardiac rehabilitation increases cardiovascular risk factors[8]	2010	Austria	Physical exercise practice
3	Illness beliefs and coping strategies as predictors of quality of life in patients in cardiovascular rehabilitation[9]	2011	Colombia	Problem copingIllness acceptance
4	Cardiovascular rehabilitation in patients with chronic heart failure of ischemic etiology[10]	2012	Cuba	Physical exercise practice
5	An investigation of changes in regional gray matter volume in cardiovascular disease patients before and after cardiovascular rehabilitation[11]	2013	Canada	Physical exercise practice
6	Psychosocial outcome in cardiovascular rehabilitation of patients with peripheral arterial disease and coronary artery disease[12]	2013	Switzerland	Anxiety control
7	Relationship between disease severity, health, and life satisfaction in cardiovascular disease patients: the mediating role of self-efficacy beliefs and illness perceptions[13]	2013	Italy	Illness acceptance
8	Cardiovascular rehabilitation/reeducation. Body image, acceptance/psychological flexibility, coping strategy, and life satisfaction: what is at stake for therapeutic patient education?[14]	2014	France	Body image improvementProblem coping
9	Effectiveness of an educational nursing intervention in modifying coronary risk factors[15]	2014	Chile	Physical exercise practice

to be continued...

... continuation - Table 1

N	Title	Year	Country	CR Indicators
10	Effectiveness of a long-term secondary prevention program after cardiovascular rehabilitation in hospitalized patients on risk and health-related quality of life in a low-education cohort: a randomized controlled study[16]	2014	Germany	Physical exercise practice
11	Maintenance of benefits obtained during outpatient cardiovascular rehabilitation with unsupervised physical exercise program after discharge[17]	2015	Brazil	Physical exercise practice
12	Impact of a phase II cardiovascular rehabilitation program on patients' quality of life[18]	2017	Chile	Illness acceptance
13	Self-care agency and self-efficacy in people with ischemic heart disease[19]	2018	Colombia	Self-careSelf-efficacy
14	Sexual activity in patients with implanted cardioverter-defibrillators enrolled in cardiac rehabilitation[20]	2018	Mexico	Sexual activity
15	Cardiopulmonary tests and biochemical profile of coronary patients in cardiovascular recovery programs[21]	2018	Romania	Physical exercise practice
16	Determinants of participation and control of risk factors according to attendance in cardiac rehabilitation programs in coronary patients in Europe: EUROASPIRE IV survey[22]	2018	24 European countries	Physical exercise practiceAnxiety control-Depression control
17	Effectiveness of alternative delivery formats of cardiac rehabilitation in improving psychological symptoms after coronary artery bypass graft surgery[23]	2018	Iran	Anxiety controlStress control
18	Evolution of depression during a rehabilitation program in cardiovascular disease patients[24]	2018	Finland	Depression control
19	Safety and outcomes of cardiac rehabilitation for patients with spontaneous coronary artery dissection[25]	2018	United States	Anxiety control
20	Acute response to aerobic exercise on cardiac autonomic control in patients in phase III of a cardiovascular rehabilitation program after myocardial revascularization[26]	2019	Brazil	Physical exercise practice
21	Cardiac rehabilitation in patients with ST-segment elevation myocardial infarction and percutaneous coronary intervention[27]	2019	Cuba	Physical exercise practice
22	Depression and anxiety and their relationship with the anthropometric profile of patients undergoing cardiac rehabilitation phases I and II[28]	2019	Cuba	Anxiety controlDepression control
23	Cardiovascular rehabilitation in patients aged 70 or older: benefits in functional capacity, physical activity, and metabolic profile in young vs. older patients[29]	2020	Finland	Physical exercise practice
24	Effects of cardiac rehabilitation in cardiovascular patients with anxiety and depression[30]	2020	Colombia	Anxiety controlDepression control
25	Cardiovascular rehabilitation increases walking distance in patients with intermittent claudication. Results from the CIPIC rehabilitation study: A Randomized Controlled Trial[31]	2021	Denmark	Physical exercise practice
26	Effectiveness of a home-based cardiac rehabilitation program on cardiovascular stress indices in men and women with myocardial infarction: a randomized controlled clinical trial[32]	2021	Iran	Physical exercise practice
27	Impact of Cardiovascular Rehabilitation on Psychophysiological Stress, Personality, and Tryptophan Metabolism: A Feasibility Randomized Pilot Study[33]	2021	Austria	Stress control
28	Cardiac rehabilitation in peripheral arterial disease at a tertiary center – Impact on arterial stiffness and functional status after 6 months[34]	2022	Romania	Physical exercise practice
29	Effect of home-based cardiac rehabilitation on depression score in patients with ischemic heart disease: a longitudinal clinical trial study[35]	2022	Iran	Depression control
30	Impact of nurse-led cardiac rehabilitation on patients' behavioral and physiological parameters after coronary intervention: a randomized pilot study[36]	2022	India	Physical exercise practice

Source: Author's own elaboration. Sobral, CE, Brazil, 2024.

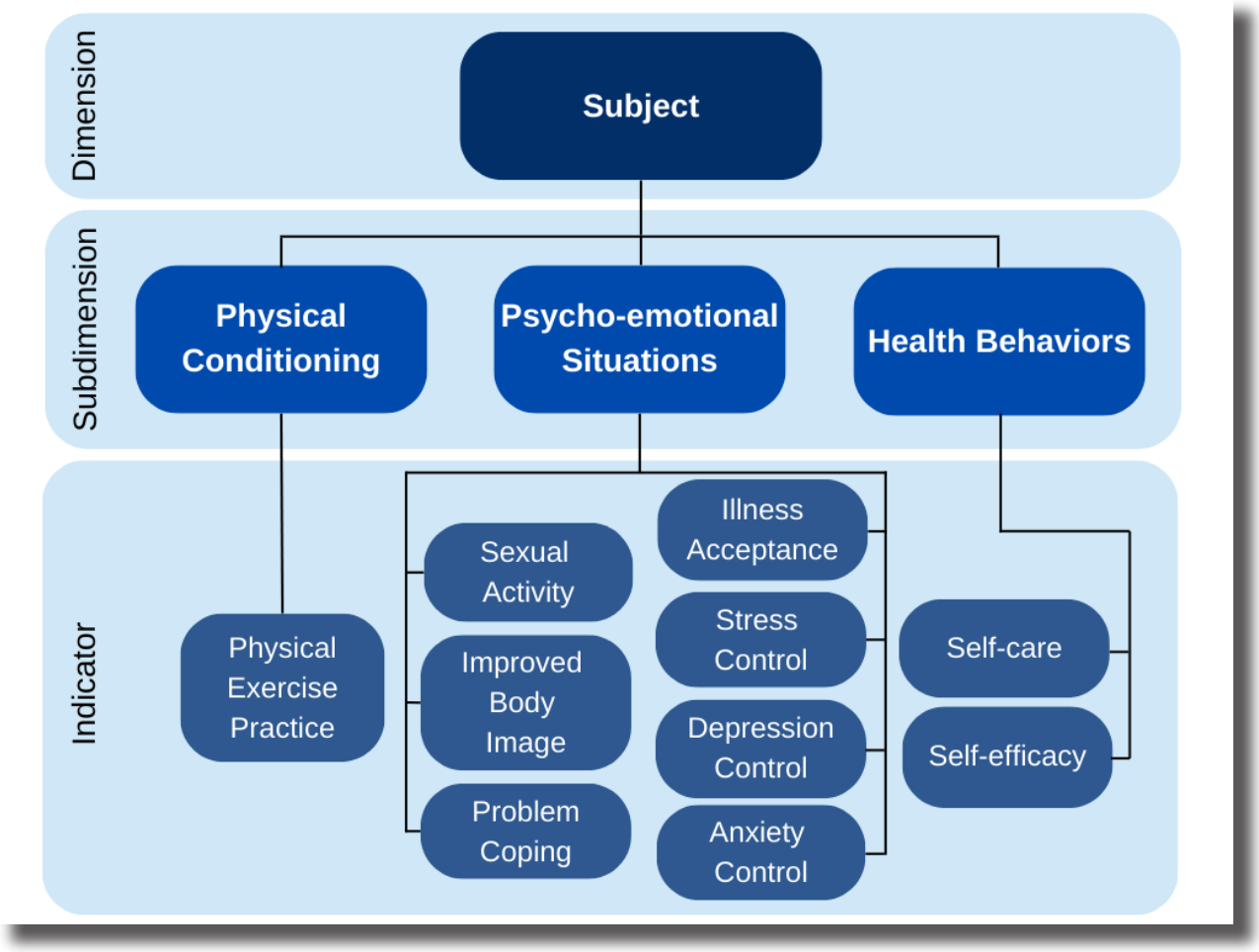

Figure 1 - Theoretical Dimensionality of the Subject Dimension in CR. Source: Author's own elaboration. Sobral, CE, Brazil, 2024.

DISCUSSION

Given the relevance of cardiovascular rehabilitation (CR) to the quality of life of individuals who have experienced cardiovascular events[3,4], it is essential to understand how the key elements emerging from the subject are expressed and how nursing can contribute to ensuring effective rehabilitation.

The analysis of publications from 2009 to 2022 highlights a gradual increase in the number of studies published over time, as evidenced by the proportion of studies from the last five years 60% compared to 23% from the first five years. These studies addressed indicators related to physical conditioning, psycho-emotional situations, and health behaviors of individuals undergoing CR.

The physical conditioning of the subject in CR is an essential element reflecting the progression of the clinical condition. The literature[10,17,26,27,32] emphasizes that physical exercise is crucial to achieving this goal and is closely associated with the maintenance of anthropometric and hemodynamic variables.

Thus, despite the variability of existing physical exercise protocols, it is confirmed that unsupervised practices can serve as a simple, effective, feasible, and safe alternative to meet physical conditioning needs, especially considering the growing number of patients requiring treatment and the limited availability of supervised rehabilitation programs[17].

From this perspective, the Brazilian Guideline for Cardiovascular Rehabilitation[37] emphasizes that the main goal of CR with a focus on physical exercise is to improve components of physical fitness in order to reduce the risk of cardiovascular events and promote the broad range of benefits associated with regular physical activity, ultimately contributing to reduced overall mortality.

With regard to psycho-emotional situations, these are confirmed to refer to expressions of sub-

jective human experiences in specific contexts involving beliefs, feelings, well-being, perceptions, desires, values, and mental health[38].

The scientific literature identified the following essential elements within this subdimension: sexual activity, improved body image, problem coping, illness acceptance, and control of anxiety, depression, and stress.

Psycho-emotional situations were addressed in 40%[12] of the studies included in the review. Nevertheless, this subdimension encompasses the largest number of essential CR elements, which suggests that even with a relatively small number of studies on the subject, it is still possible to identify multiple variables that express the psychological and emotional aspects of individuals undergoing rehabilitation.

Sexual activity and improved body image are examples of indicators cited in a single study each. However, this does not diminish their relevance, considering that most CR publications still prioritize the analysis of biological aspects, often treating other areas of the patient's life as secondary.

In the context of sexual activity, one study[20] reported that 84% of the patients resumed this practice during the course of the CR program. The authors[20] support the view that early enrollment in rehabilitation programs tends to facilitate the return to normal sexual activity, though individual differences in cardiac conditions and physical fitness must be taken into account.

Regarding body image improvement, it was shown to be associated with variables related to life satisfaction[14]. In summary, the findings highlight the need to incorporate therapeutic education approaches and psycho-emotional management strategies into rehabilitation practices.

Regarding problem coping and illness acceptance, it is important to highlight that these indicators are influenced by factors such as social support, the type of treatment available, and the individual's own perceptions and experiences[9,14]. Therefore, healthcare professionals share the responsibility of promoting patient well-being through comprehensive interventions that foster self-acceptance, self-esteem, and ongoing self-monitoring.

With respect to the control of anxiety, depression, and stress, the studies reported that rehabilitation processes combining prescribed and professionally supervised physical exercise with health education focused on promoting self-care—and tailored to the patient's informational needs—positively impact psychological well-being[22,30,33,35].

Concerning Health Behaviors, the third subdimension of the subject, the identified indicators were self-care and self-efficacy[19]. These concepts have proven to be decisive in the acquisition of knowledge and skills by individuals undergoing rehabilitative treatment.

Self-care agency and perceived self-efficacy are reported as cross-cutting elements for maintaining the recommendations given by the healthcare team and implementing the necessary lifestyle changes in response to the pathological condition[19]. In this context, beyond encouraging patients to take responsibility for their own care through the establishment of self-care routines, it is essential to provide mechanisms that enable a sense of capability to improve health status. These attributes are closely related to the previously discussed psycho-emotional situations, particularly those involving problem coping.

From this perspective, the integrative review revealed a limited number of studies that identify CR indicators with a nursing-focused approach. Many of the studies originated from the fields of Medicine and Physiotherapy. Moreover, most of the research emphasized a physiological perspective, with few publications addressing emotional or behavioral dimensions.

The findings of this study contribute, in clinical practice, to the identification of subject-expressed indicators of CR, thereby supporting the implementation of care guided by Nursing Assessment. Furthermore, the study allowed for the clarification of one of the dimensions of CR, contributing to the development of the Cardiovascular Rehabilitation Measurement Scale, which is currently undergoing semantic validation and may, in the future, serve as a tool to support the Nursing Process.

CONCLUSION

The integrative review enabled the analysis of 30 studies that present essential elements of the Subject dimension in cardiovascular rehabilitation (CR), identifying ten indicators of the phenomenon: physical exercise practices, sexual activity, improved body image, problem coping, illness acceptance, stress control, depression control, anxiety control, self-care, and self-efficacy. These indicators represent factors that influence cardiovascular recovery, aiming to describe manifestations that reflect the effectiveness of rehabilitation.

Thus, by clarifying this dimension, it is considered feasible to conduct an appropriate assessment of nur-

sing care in CR programs or processes, given that it encompasses biological, psycho-emotional, and behavioral factors. It is suggested that this assessment be implemented in the context of applying the Middle-Range Theory for Nursing in Cardiovascular Rehabilitation, as well as in any nursing-guided approaches in this field, which requires further research investment from the profession.

The main limitation of the study lies in the exclusive analysis of scientific articles indexed in the selected databases, without considering other bibliographic sources that could broaden the scope of investigation. Therefore, further research is recommended to map existing studies on the topic using different sources, such as grey literature, particularly through scoping reviews.

CRediT author statement

Conceptualization: Frota, KC; Silva, LF. Methodology: Frota, KC; Silva, LF; Ponte, KMA. Validation: Silva, LF; Ponte, KMA. Statistical analysis: Frota, KC; Silva, LF. Formal analysis: Frota, KC; Silva, LF; Nascimento, ML; Portela, SR. Investigation: Frota, KC; Silva, LF; Ponte, KMA; Nascimento, ML; Portela, SR. Resources: Frota, KC; Silva, LF; Ponte, KMA; Nascimento, ML; Portela, SR. Writing-original draft preparation: Frota, KC. Writing-review and editing: Frota, KC; Silva, LF; Ponte, KMA; Nascimento, ML; Portela, SR. Visualization: Silva, LF; Ponte, KMA. Supervision: Silva, LF; Ponte, KMA. Project administration: Frota, KC; Silva, LF.

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

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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