ORIGINAL ARTICLE

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CARDIOVASCULAR CLINICAL SEMIOLOGICAL ASSESSMENT IN INSTITUTIONALIZED PATIENTS IN A PUBLIC HOSPITAL: CROSS-MAPPING STUDY

AVALIAÇÃO CLÍNICA SEMIOLÓGICA CARDIOVASCULAR EM PACIENTES INSTITUCIONALIZADOS EM HOSPITAL PÚBLICO: ESTUDO DE MAPEAMENTO CRUZADO

EVALUACIÓN CLÍNICA SEMIOLÓGICA CARDIOVASCULAR EN PACIENTES INSTITUCIONALIZADOS EN UN HOSPITAL PÚBLICO: ESTUDIO DE MAPEO CRUZADO

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ABSTRACT

Introduction: Semiology is essential for clinical evaluation, assisting in the identification of signs and symptoms and guiding diagnoses and treatments. **Objective**: This study investigated the application of cardiovascular clinical evaluation in a public hospital in Imperatriz-MA, focusing on semiological techniques and their frequency of use. Cardiovascular diseases are responsible for high global morbidity and mortality, and an effective semiological evaluation can reduce the need for costly complementary tests. **Method**: The research analyzed the profile of healthcare professionals, the semiological techniques performed, and their adherence to literature recommendations. Data collection was conducted using a semi-structured questionnaire, addressing clinical practice in the Cardiological Ward. **Results**: The results indicated that the practice of semiology is often incomplete, with failures in history taking, inspection, palpation, and auscultation, compromising the quality of care for institutionalized patients. Non-adherence by medical professionals was a significant challenge. **Conclusion**: The study highlights the urgent need to improve adherence to semiological practices to optimize care and reduce dependence on complementary tests.
Keywords: Semiology; Cardiovascular Clinical Evaluation; Cross-Mapping.

RESUMO

Introdução: A semiologia é essencial para a avaliação clínica, auxiliando na identificação de sinais e sintomas e no direcionamento de diagnósticos e tratamentos. **Objetivo:** Este estudo investigou a aplicação da avaliação clínica do sistema cardiovascular em um hospital público de Imperatriz-MA, com foco nas técnicas semiológicas e sua frequência de aplicação. **Metodologia**: As doenças cardiovasculares são responsáveis por alta morbimortalidade mundial, e uma avaliação semiológica eficaz pode reduzir a necessidade de exames complementares dispendiosos. A pesquisa analisou o perfil dos profissionais de saúde, as técnicas semiológicas realizadas e sua aderência às recomendações literárias. A coleta de dados foi realizada por meio de um formulário semiestruturado, abordando a prática clínica na Enfermaria Cardiológica. **Resultados**: Os resultados indicaram que a prática da semiologia é frequentemente incompleta, com falhas na anamnese, inspeção, palpação e ausculta, o que compromete a qualidade do atendimento aos pacientes institucionalizados. A não adesão dos médicos foi um desafio significativo. **Conclusão**: A pesquisa destaca a necessidade urgente de melhorar a adesão às práticas semiológicas para otimizar os cuidados e reduzir a dependência de exames complementares.
Palavras-chave: Semiologia; Avaliação Clínica Cardiovascular; Mapeamento Cruzado.

RESUMEN

Introducción: La semiología es esencial para la evaluación clínica, ayudando en la identificación de signos y síntomas y guiando diagnósticos y tratamientos. **Objetivo**: Este estudio investigó la aplicación de la evaluación clínica cardiovascular en un hospital público de Imperatriz-MA, enfocándose en las técnicas semiológicas y su frecuencia de uso. Las enfermedades cardiovasculares son responsables de una alta morbilidad y mortalidad global, y una evaluación semiológica efectiva puede reducir la necesidad de pruebas complementarias costosas. **Método**: La investigación analizó el perfil de los profesionales de la salud, las técnicas semiológicas realizadas y su adherencia a las recomendaciones de la literatura. La recolección de datos se realizó mediante un cuestionario semiestructurado, abordando la práctica clínica en la Sala Cardiológica. **Resultados**: Los resultados indicaron que la práctica de la semiología a menudo es incompleta, con fallas en la anamnesis, inspección, palpación y auscultación, lo que compromete la calidad de la atención a los pacientes institucionalizados. La falta de adherencia de los profesionales médicos fue un desafío significativo. **Conclusión**: El estudio destaca la necesidad urgente de mejorar la adherencia a las prácticas semiológicas para optimizar la atención y reducir la dependencia de pruebas complementarias.
Palabras clave: Semiología; Evaluación Clínica Cardiovascular; Mapeo Cruzado.

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INTRODUCTION

Semiology is characterized as a healthcare field responsible for investigating and studying the signs and symptoms presented by patients, aiming to understand the patient as a complex being belonging to a biopsychosocial, economic, and cultural context [1].

This discipline is considered the foundation of the physician-patient relationship, with clinical assessment being the primary technique capable of identifying the presence of symptoms affecting the patient's body, thus supporting the accurate formulation of diagnosis and treatment of diseases. Moreover, when a patient's physical examination is conducted properly, the need for costly complementary tests, which burden the Brazilian Unified Health System (SUS), becomes unnecessary [1,2].

Among all human body systems that require precise semiological evaluation, the cardiovascular system holds particular importance, as cardiovascular diseases (CVD) are currently one of the leading causes of morbidity and mortality worldwide. This is especially notable in developing countries with low- and middle-income populations, such as Brazil, largely due to the population's precarious lifestyle, including inadequate dietary patterns, insufficient levels of physical activity, smoking, excessive alcohol use, drug abuse, and nutritional disorders [3,4].

Focusing further on the importance of the cardiovascular system as the main cause of non-communicable chronic diseases (NCDs), it is essential for healthcare professionals to possess knowledge of the anatomy and physiology of this system, given that the physical examination is directly related to the structure and functioning of the heart and blood vessels. Among the techniques available for the physical examination of this system, inspection and palpation provide extremely important information that is complemented by findings obtained through auscultation [1,4].

Thus, it is understood that clinical evaluation of the cardiovascular system should be valued and strengthened within healthcare services, as it allows the identification of numerous pathological disorders and guides patients toward more effective and resolutive therapeutic plans by following the evaluative sequence: inspection, palpation, and auscultation [5].

However, the semiological evaluation of the cardiovascular system has been increasingly neglected by healthcare professionals in hospital settings, with detailed history-taking and physical examination being replaced by the use of technology, laboratory, and imaging tests, which should be used complementarily rather than as the primary tools for diagnosis and treatment of cardiovascular diseases. Clinical assessment has increasingly become a secondary, rather than a primary, approach [5,6].

Furthermore, regarding Maranhão, according to the Mortality Information System (SIM), between 2016 and 2019, a total of 42,574 deaths due to cardiovascular diseases were recorded among the population, reflecting a high

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prevalence of this condition among the state's causes of death [7].

Therefore, within this thematic area, the research problem is centered on understanding the following questions: Which semiological techniques are performed by healthcare professionals during the clinical assessment of patients with cardiovascular involvement? Which semiological techniques are recommended by the literature for an adequate and effective clinical evaluation of patients with cardiovascular involvement?

In view of the need for healthcare professionals who recognize the importance of systematic clinical assessment of cardiac semiology over complementary tests in the city of Imperatriz, MA, and who effectively implement the established scientific recommendations, the present study aims to analyze the applicability of clinical assessment of patients with cardiovascular involvement institutionalized in a public hospital in the municipality of Imperatriz, MA, using a cross-mapping approach.

In this context, the objective of this work is to evaluate the applicability of clinical assessment of patients with cardiovascular involvement institutionalized in a public hospital in the Municipality of Imperatriz, MA, using a cross-mapping approach.

METHODS

Study type

This is a descriptive and exploratory study conducted with healthcare professionals working in a Cardiovascular Unit of a Public Hospital in Imperatriz, MA [8].

Characterization of the study area

The study was conducted in the Cardiology Ward of the Public Hospital of Imperatriz, MA. The ward is located on the first floor, where patient follow-up and monitoring for cardiological conditions are carried out.

All services at the Municipal Hospital of Imperatriz are exclusively dedicated to the Brazilian Unified Health System (SUS). Furthermore, the hospital serves as a teaching and practical training field for students in technical courses, undergraduate programs, and postgraduate programs (both Lato Sensu and Stricto Sensu). This institution was chosen due to being a high-complexity hospital serving as a reference for urgent and emergency care in the southern Tocantina region of Maranhão, especially regarding care for patients with cardiological conditions of all etiologies, such as arrhythmias, angina, acute myocardial infarction (AMI), murmurs, heart failure, among others.

Population and sample

Participants were selected based on established inclusion criteria, which considered all healthcare professionals with a minimum of six (6) months of clinical experience in any healthcare area and at least three (3) months of experience in the ward in question.

Exclusion criteria included failure to attend the study site after three prior alternative scheduling attempts, absence from five

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consecutive visits, or leave/absence for any health-related reason during the data collection period.

Data collection

Data collection was conducted after approval by the Research Ethics Committee (CEP). Healthcare professionals were invited to participate individually, through prior scheduling.

The data collection instrument was a semi-structured form containing objective questions regarding participant identification data, gender, educational level, age range, self-declared race/color, marital status, monthly income, as well as profession-specific information and techniques performed, such as professional category, length of experience, area of practice in medium-complexity care, and specific knowledge about semiological aspects for clinical evaluation of patients with cardiological involvement. The instrument was applied during the professionals' work shifts in a private room at the hospital to ensure confidentiality.

To evaluate the applicability of the mandatory semiological techniques during clinical assessment of the cardiac system, a form was used to quantify and qualify attitudes, actions, behaviors, and quality-of-life domains related to the recommended practices. Respondents were provided with a list of propositions or questions, allowing them to mark or leave blank items according to their responsibilities and assignments within the ward.

Cross-mapping

Mapping is a method developed to compare health data where a dissociation between theory and practice occurs. The term "mapping" was defined as "confronting and expressing the meaning of equal or similar words," aiming to identify similarities in the evaluated object and subsequently validate it, applicable in different contexts (9).

In the present study, mapping was conducted to compare the semiological clinical assessment practices recommended in the literature for patients with cardiac conditions with the practices performed in the specialized ward of a public hospital in Imperatriz, MA.

For this purpose, the instrument included the semiological practices found in the literature, and in parallel, the activities performed by healthcare professionals were recorded and considered corresponding by the researcher.

Organization, analysis, and presentation of results

Data were processed, discussed, and thoroughly analyzed according to relevant literature between May and June 2024. Subsequently, results were presented in the form of charts and tables using Microsoft Excel, employing descriptive statistics with absolute and relative frequency distribution of the categories selected for each clinical evaluation analyzed.

Ethical aspects

The study adhered to the ethical principles established in CNS/MS Resolution

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No. 466/12, and authorization was requested from the General Directorate of the Municipal Hospital of Imperatriz, MA. After approval, the project was submitted to the Research Ethics Committee (CEP) via the Plataforma Brasil system and approved under Opinion No. 6.644.719.

All study participants were informed about the research objectives and details, and after clarification, they could choose whether or not to participate. Those who agreed to participate were asked to sign the Free and Informed Consent Form (TCLE). Confidentiality and anonymity of the provided data were guaranteed for all participants.

RESULTS

The results are presented in two sections: characterization of the sociodemographic and economic profile of the healthcare professionals participating in the study, followed by a description of the clinical actions performed by the professionals, as well as a cross-mapping with the recommendations proposed by current scientific literature regarding effective and high-quality semiological practice.

Sociodemographic and Economic Characterization of Healthcare Professionals Caring for Patients with Cardiovascular Conditions

The group of participating professionals was entirely composed of females, aged between 34 and 49 years, with at least six months of experience in the ward in question. All nurses self-identified as mixed-race (parda), were married, and had a family income ranging from BRL 13,950.00 to more than BRL 23,250.00 (Table 1).

Table 1 - Characterization of healthcare professionals working in the cardiology ward of a public hospital, according to professional category, gender, age, self-declared race/color, marital status, income, sector of work, and length of service in the sector.

VARIABLES	N	%
PROFESSIONAL CATEGORY		
Physician	0	0%
Nurse	3	100%
GENDER		
Female	3	100%
Male	0	0%

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AGE		
34-41 years	1	33,3%
42-49 years	2	66,6%
RACE/COLOR (SELF-DECLARED)		
Mixed (Parda)	3	100%
MARITAL STATUS		
Married	3	100%
INCOME		
BRL 13,950–23,250	2	66,6%
> BRL 23,250	1	33,3%
SECTOR OF WORK		
Medical Clinic	2	66,6%
Other	1	33,3%
LENGTH OF SERVICE IN THE SECTOR		
6 months–1 year	1	33,3%
3–6 years	1	33,3%
> 6 years	1	33,3%

N=03

Source: authors, 2024.

Semiological Clinical Assessment of the Cardiovascular System Performed by Healthcare Professionals

The compilation of cardiovascular semiological techniques performed by the nurses allowed for the cross-mapping, which compared the activities described by the professionals with the literature predominantly used. Eight stages, with sub-stages, were identified in the cardiac physical examination, arranged in the following order: medical history, characterization of precordial pain, inspection and palpation, cardiac auscultation, aorta examination, aorta inspection and palpation, pulse examination, and radial

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pulse assessment. Each stage was evaluated to determine whether it was performed by the professionals according to the literature. None of the interviewed professionals completed all stages fully (Table 2).

Table 2 - Semiological Clinical Assessment of the Cardiovascular System Performed by Healthcare Professionals.

Clinical Assessment Recommended by Literature	**Clinical Assessment Performed by Healthcare Professionals in a Public Hospital in Imperatriz, MA**							
	Physicians				Nurses			
	YES	%	NO	%	YES	%	NO	%
During the Medical History, you ask the patient about:								
Personal history	-	-	-	-	3	100%	0	0%
Family history	-	-	-	-	1	33,3%	2	66,7%
Medication use	-	-	-	-	3	100%	0	0%
Previous surgeries	-	-	-	-	1	33,3%	2	66,7%
Lifestyle habits	-	-	-	-	2	66,7%	1	33,3%
Socioeconomic conditions	-	-	-	-	1	33,3%	2	66,7%
Place of residence	-	-	-	-	0	0%	3	100%
Smoking	-	-	-	-	1	33,3%	2	66,7%
Alcohol consumption	-	-	-	-	2	66,7%	1	33,3%
Sleep disturbances	-	-	-	-	1	33,3%	2	66,7%
Recent syncope	-	-	-	-	0	0%	3	100%
Palpitations	-	-	-	-	0	0%	3	100%
Dyspnea	-	-	-	-	2	66,7%	1	33,3%
Cough and expectoration	-	-	-	-	1	33,3%	2	66,7%
Wheezing	-	-	-	-	0	0%	3	100%
Hemoptysis	-	-	-	-	0	0%	3	100%
Asthenia	-	-	-	-	1	33,3%	2	66,7%
Squatting position	-	-	-	-	0	0%	3	100%
Evaluation of precordial pain:								
Aspect :								

Location	-	-	-	-	3	100%	0	0%
Radiation	-	-	-	-	2	66,7%	1	33,3%
Character	-	-	-	-	0	0%	3	100%
Intensity	-	-	-	-	2	66,7%	1	33,3%
Duration	-	-	-	-	1	33,3%	2	66,7%
Frequency	-	-	-	-	1	33,3%	2	66,7%
Triggering/aggravating factors	-	-	-	-	0	0%	3	100%
Relieving factors	-	-	-	-	0	0%	3	100%
Concomitant symptoms (which may precede, accompany or follow the pain)	-	-	-	-	1	33,3%	2	66,7%
Inspection and palpation:								
Aspect:								
Cyanosis	-	-	-	-	3	100%	0	0%
Edema	-	-	-	-	3	100%	0	0%
Bulges	-	-	-	-	0	0%	3	100%
Ictus cordis	-	-	-	-	0	0%	3	100%
Visible movements	-	-	-	-	0	0%	3	100%
Cardiovascular thrill	-	-	-	-	0	0%	3	100%
Cardiac auscultation:								
Site:*								
Mitral	-	-	-	-	2	100%	0	0%
Pulmonary	-	-	-	-	2	100%	0	0%
Aortic	-	-	-	-	0	0%	2	100%
Tricuspid	-	-	-	-	0	0%	2	100%
Left sternal border	-	-	-	-	0	0%	2	100%
Right sternal border	-	-	-	-	0	0%	2	100%
Lateral neck regions	-	-	-	-	1	50%	1	50%
Inter-scapular vertebral regions	-	-	-	-	0	0%	2	100%
Aorta examination/Technique: *								
Inspection	-	-	-	-	0	0%	2	100%
Palpation	-	-	-	-	0	0%	2	100%
Auscultation	-	-	-	-	0	0%	2	100%
Pulse examination/ Aspect:								

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Radial pulse	-	-	-	-	3	100%	0	0%
Capillary pulse	-	-	-	-	0	0%	3	100%
Carotid pulse	-	-	-	-	2	66,7%	1	33,3%
Jugular pulse	-	-	-	-	0	0%	3	100%
Pulse characteristics assessment/ Aspect:								
Osler maneuver	-	-	-	-	0	0%	3	100%
Frequency	-	-	-	-	0	0%	3	100%
Rhythm	-	-	-	-	2	66,7%	1	33,3%
Amplitude	-	-	-	-	3	100%	0	0%
Tension/hardness	-	-	-	-	0	0%	3	100%

Only 2 of the 3 participating nurses completed these items. N = 3

Source: authors, 2024

DISCUSSION

The analysis of the data collected from the target population for the cross-mapping revealed a sample composed entirely of female nurses, highlighting the complete lack of engagement from medical professionals. This indicates a fragility and neglect regarding the scientific relevance of healthcare quality. According to a study conducted at a public university in Minas Gerais, numerous challenges hinder scientific research in Brazil, primarily related to the research environment, including resource scarcity and deficient infrastructure [10].

This scenario of challenges is also present in the reality of public health research in Imperatriz, MA, as reflected in the data collected for the present study. Despite repeated requests for medical professionals to participate, success was not achieved, with responses ranging from outright refusal to the absence of contact, even with prior scheduling. Several factors contribute to this outcome, such as excessive workloads, insufficient numbers of healthcare professionals relative to patients, and a lack of commitment or interest in research. Consequently, this perpetuates the national scenario of low engagement and barriers to conducting scientific research in healthcare [11,12].

Regarding the practice of physical examination, it is known that the initial moments with a patient provide rich visual, auditory, and tactile information that determine both the effectiveness and costs of subsequent treatment. Therefore, it is indisputable that a portion of diagnoses can be made during the medical history and another portion during the physical examination. However, it is evident that healthcare professionals' diagnostic skills through physical examination fall below the

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levels recommended in the scientific literature [13].

During the medical history, a complete review of the patient's current and past pathological conditions is conducted, alongside a description of the individual and their interaction with the environment. The inefficiency of cardiac examinations in daily practice begins at this stage, as none of the participating professionals conducted it comprehensively. Consequently, the full care of institutionalized patients may be compromised, as relevant information for constructing the patient's clinical history could be missed [14].

In the context of the physical examination, subsequent steps are critical and must follow a sequence. According to Semiologia do Porto (2019)[1], these steps include: characterization of precordial pain, inspection and palpation, cardiac auscultation, aorta examination, aorta inspection and palpation, pulse examination, and radial pulse assessment.

Regarding the characterization of precordial pain, only the "location" criterion was fully assessed by the interviewed professionals. This is potentially problematic because chest pain can have a wide range of causes, mostly benign, yet thorough investigation is essential, as some etiologies, such as cardiac causes, can be fatal if not promptly recognized. Incomplete characterization of precordial pain may be highly detrimental to institutionalized patients, potentially exposing them to unnecessarily invasive protocols or delaying interventions that require urgent attention [15].

With respect to inspection, palpation, and auscultation, although partially performed by the professionals, important items were not evaluated, significantly reducing the effectiveness of the cardiovascular physical examination. For instance, none of the professionals performed inspection of the ictus cordis, which, in the absence of imaging tests, is a crucial tool for identifying cardiomegaly [16,17].

Evaluation of skin color and the presence of edema are crucial for differentiating causes of impaired tissue perfusion and cardiac output; these items were fully assessed by the participants. However, in auscultation, a key component of cardiovascular semiotics, the professionals examined only two of the four recommended sites (aortic, pulmonary, tricuspid, and mitral), compromising the systematic approach necessary to gather physiological information. Consequently, aspects such as the phonetics of heart sounds, rhythm, and the presence of murmurs or third and fourth sounds cannot be assessed adequately, potentially harming patient care [18,19].

Regarding pulse assessment, only the radial pulse was evaluated consistently by all participating professionals. Concerning pulse characteristics, only amplitude was fully assessed, while crucial items such as rhythm, frequency, and tension—which are important for identifying specific pathologies or cardiovascular disorders—were neglected. Partial assessment of these aspects challenges patient care at HMI, as

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each pulse and its characteristics can indicate particular pathological conditions, such as bisferiens pulses in heart failure or weak and delayed pulses (parvus et tardus) in aortic stenosis [19,20].

The results of this study indicate that effective implementation of semiological clinical assessment at the public hospital in Imperatriz, MA, is hindered by various factors, including resistance and lack of active participation from medical professionals. The refusal or absence of engagement, even after prior scheduling, represents a significant barrier to applying recommended semiological techniques. This scenario reflects a broader reality, where working conditions, human resource shortages, and daily demand pressures create overload, negatively impacting adherence to scientific practices and care quality. Therefore, in addition to the urgent need for training and awareness regarding the importance of semiology, structural and organizational issues within the healthcare system must be addressed to create an environment conducive to participation and high-quality research [21-23].

CONCLUSIONS

Based on the discussion and the aspects presented, the data collected and the parallels drawn during the research reveal a clear dissonance between the clinical practice of cardiovascular semiology and what is recommended in the literature. In this regard, none of the steps in the semiotechnical sequence were fully performed, with most being executed only partially by the participating professionals, as observed in the medical history, inspection and percussion, and even in auscultation.

The consequence of this partial execution is a limitation in correlating pathophysiology with elements of the physical examination, negatively impacting patient care. In addition to demonstrating neglect of cardiovascular semiology and the early identification of characteristic signs, this practice also imposes a financial burden on public healthcare services due to the prioritization of complementary examinations.

Therefore, it is of utmost importance to emphasize the recommended techniques in cardiovascular semiology, ensuring that their relevance in healthcare practice is consistently highlighted. This promotes more comprehensive care and allows for the physiopathological correlation of findings from the physical examination.

Among the challenges encountered during this research, there was notably low adherence from medical professionals. Despite multiple visits and prior scheduling over a two-month period, it was not possible to secure participation from this professional group, who often cited heavy workloads on the day of the visit or, in many cases, failed to attend the scheduled appointments.

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Data Availability Statement

No databases were generated in this study. The information presented is described in the body of the article.

Conflict of Interest Statement

Nothing to declare.

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