Medical University - Varna

„Prof. Dr. Paraskev Stoyanov”

Faculty of Public health

Department of Health care

Ivanka Atanasova Stoyanova

MANAGEMENT OF CARDIAC CARE IN COMORBID PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

ABSTRACT

of a dissertation

for awarding the educational and scientific degree of "Doctor"

Academic Supervisors:

Prof. Maria Negreva, MD, DSc

Prof. Silvia Borisova, PhD, DSc

Varna, 2024

Medical University - Varna

„Prof. Dr. Paraskev Stoyanov”

Faculty of Public health

Deparment of Health care

Ivanka Atanasova Stoyanova

MANAGEMENT OF CARDIAC CARE IN COMORBID PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

ABSTRACT

of a dissertation

for awarding the educational and scientific degree of "Doctor"

Academic Supervisors:

Prof. Maria Negreva, MD, DSc

Prof. Silvia Borisova, PhD, DSc

Official Reviewers:

Prof. Biyanka Tornyova, PhD

Assoc. Prof. Mariya Stoyanova Dimova, MD, PhD

Varna, 2024

The dissertation contains 240 pages, including 18 tables, 35 figures, and 8 appendices. A total of 247 references have been cited.

The dissertation was discussed and referred for defence at a departmental council of the Department of Health care at MU "Prof. Dr. Paraskev Stoyanov" – Varna on 05.12.2024.

The public defense of the dissertation will take place on 27.03.2025 at 13:30, in PhD school hall and in a virtual hall of the online platform Webex at the Medical University - Varna, at an open session of the Scientific Jury.

The defense materials are available in the Scientific Department of MU–Varna and are published on the website of MU–Varna.

Note: In the abstract, the numbers of the tables and figures do not correspond to the numbers in the dissertation.

CONTENTS

Introduction.....5

I. Aim, objectives, material and methodology of the study.....7

1.1. Aim, objectives and working hypotheses.....7

1.2. Material and methodology.....8

1.2.1. Subject of the study.....8

1.2.2. Objects of the study.....8

1.2.3. Study design.....9

1.2.4. Study organization.....16

1.3. Research methods.....18

1.3.1. Sociological methods.....18

1.3.2. Statistical methods.....19

II. Results and discussion.....20

2.1. Characteristics of the study participants.....20

2.2. Impact of lifestyle and risk factors on the health status and prognosis of comorbid patients with acute myocardial infarction.....27

2.2.1. Study of lifestyle-related factors affecting the health status of patients with cardiovascular diseases.....27

2.2.2. Analysis of the condition in patients with acute myocardial infarction.....33

2.3. The nurse in cardiology intensive care-practices and challenges.....36

2.3.1. Education, competencies, and challenges in contemporary practice.....36

2.3.2. Optimizing nursing care for comorbid patients with cardiovascular diseases....47

2.3.3. Interactions between patients and healthcare professionals in the treatment and care of acute myocardial infarction and comorbid conditions.....49

2.3.4. Psychological aspects of recovery after acute myocardial infarction.....54

2.4. Factors for improving healthcare and condition management – the experience of patients with acute myocardial infarction.....57

III. Comorbid patients with AMI – challenges and opportunities in nursing practice.....65

3.1. Optimizing the management of cardiac care for comorbid patients with acute myocardial infarction.....65

3.2. Nursing interventions guide – application in comorbid patients.....71
3.3. Monitoring – a key element in nursing care.....72
3.4. Continuing education and competencies enhancement for nursing practice in comorbid patients with acute myocardial infarction.....73
3.5. Management of risk factors in patients.....79
IV. Conclusions, proposals, contributions.....85
4.1. Conclusions.....85
4.2. Proposals.....86
4.3. Contributions.....87
Publications on the dissertation topic.....89

INTRODUCTION

The acute coronary syndrome (ACS) represents a group of clinical conditions resulting from the sudden interruption of blood supply to the myocardium, leading to its ischemia and, in many cases, to acute myocardial infarction (AMI). AMI is one of the most common and life-threatening manifestations of ACS, requiring immediate and comprehensive medical intervention. Globally, cardiovascular diseases, particularly AMI, are a leading cause of morbidity and mortality, with this trend persisting despite advancements in medical technologies and therapeutic approaches. In the context of an aging population and a rising percentage of patients with comorbid conditions, the management of AMI and its associated complications is becoming increasingly complex, requiring specific interventions and care.

Of particular importance is the role of nurses in the management of care for comorbid patients with AMI. Nursing care includes the assessment of the patient's clinical condition, monitoring, and interventions aimed at preventing complications and supporting the recovery process. The nurse, as a key member of the multidisciplinary team, plays a crucial role in implementing therapeutic strategies and maintaining effective communication between specialists, which ensures higher quality of cardiac care. Nursing care for patients with AMI and comorbidities also involves providing individualized information and support, which significantly contributes to their rehabilitation and long-term disease management.

The multidisciplinary approach, which includes physicians, nurses, rehabilitation specialists, and social workers, is critical for providing comprehensive and high-quality care. For comorbid patients with acute myocardial infarction (AMI), this approach is of particular importance, as it requires simultaneous control of the cardiac condition and appropriate treatment of comorbid diseases. The development of coordinated therapeutic plans, integrating various specialties, enables personalized care, enhancing the effectiveness of treatment and the patient's quality of life.

The increasing number of patients with acute myocardial infarction and multiple comorbidities places high demands on the healthcare system. Increased focus on the quality management of cardiac care for these patients is essential for improving therapeutic outcomes and reducing the risks of recurrent cardiac events. The development of tailored nursing interventions for patients with acute myocardial infarction would expand the approach to care management in comorbid patients. Optimizing cardiac care, with the aim of achieving the best clinical outcomes, is an approach that enhances patient satisfaction and reduces the burden of cardiovascular diseases on the healthcare system. Contemporary practices and challenges in the

management of nursing care for patients with acute myocardial infarction are crucial in the development of this dissertation.

I. AIM, OBJECTIVES, MATERIAL AND METHODOLOGY OF THE STUDY

1.1. Aim, objectives and working hypotheses

Aim: To investigate and analyze the main nursing activities and their role in the management of cardiac care for comorbid patients with acute myocardial infarction, with the goal of developing effective approaches to improve the quality, coordination, and individualization of nursing care, aimed at optimizing patient outcomes and prognosis.

To achieve this aim, the following **tasks** have been set:

1. To conduct a theoretical analysis of Bulgarian and international databases on activities and care for comorbid patients with acute myocardial infarction.
2. To examine the demographic, social, and medical characteristics of patients with acute myocardial infarction and comorbid conditions, in order to determine their specific needs and healthcare requirements.
3. To investigate the lifestyle factors that affect the health status of patients with cardiovascular diseases.
4. To identify and assess the main risk factors and clinical features that determine the severity and prognosis of the cardiac condition in comorbid patients with acute myocardial infarction.
5. To analyze existing approaches and strategies for the treatment and care of comorbid patients with acute myocardial infarction in both hospital and outpatient settings.
6. To investigate the role of nursing assessment, interventions, and monitoring on the quality of life and health outcomes of patients.
7. To develop an integrated framework, including key principles, methods, and strategies for optimal management of cardiac care, aimed at improving health outcomes and the quality of life of patients.

Working hypotheses

Based on the reviewed literature and the aim of the dissertation research, the following working hypotheses were formulated:

1. Optimized management of nursing care, tailored to the individual needs of comorbid patients with acute myocardial infarction, leads to improvements in the patients' health status and quality of life.

2. No significant difference is found in the condition and prognosis of comorbid patients with acute myocardial infarction when different approaches to managing nursing and cardiac care are applied.
3. Improving the coordination between nursing care and the multidisciplinary team significantly enhances the effectiveness of treatment and reduces the risk of complications in patients with acute myocardial infarction and comorbid conditions.
4. The active involvement of nurses in identifying and managing risk factors in comorbid patients with acute myocardial infarction improves the long-term prognosis of patients.

The hypotheses were formulated taking into account the challenges in managing cardiac care, as well as the need to optimize nursing activities aimed at improving the condition and prognosis of patients.

1.2. Material and methodology

1.2.1. Subject of the study

The subject of this study is the role of nursing activities within the multidisciplinary team, their planning, coordination, and impact on the effectiveness of treatment, the quality of care, and the long-term prognosis of patients.

Depending on the subject of the research, the dissertation includes two main components of the scientific study:

- Theoretical research;
- Empirical research.

1.2.2. Objects of the study

- Regulatory documents governing the activities of nurses;
- Literary/electronic sources regarding best practices, organization of nursing activities, and care for comorbid patients with AMI;
- Processes of managing cardiac care – approaches to planning and optimizing nursing activities; assessment of the quality and coordination of medical care;
- Nurses involved in the care of patients with AMI;
- Patients with acute myocardial infarction (AMI) and concomitant diseases (comorbidity);

- The interaction between nurses, physicians, and other specialists in the organization and coordination of care for patients with comorbidities;

1.2.3. Study design

The study design includes both theoretical and empirical research, aimed at investigating and evaluating the effectiveness of cardiac care management for comorbid patients with acute myocardial infarction. The research combines quantitative and qualitative methods, allowing for the integration of different perspectives to understand the key factors influencing the quality of care and patient recovery.

I. Theoretical research

1. Exploration of best practices and recommendations for the treatment and care of patients with acute myocardial infarction.

A systematic analysis of the management practices for cardiac care in comorbid patients with AMI has been applied. Information was extracted based on formulated inclusion and exclusion criteria. The quality of the sources was assessed based on: research methodology; presentation of results; applicability of conclusions.

The process includes the following key steps:

- **Defining the aim and scope of the study** – the specific question to be addressed has been clarified, along with the parameters of the studied population, interventions, and outcomes: *"What are the most effective practices for managing cardiac care in patients with acute myocardial infarction and comorbid conditions (diabetes, hypertension, COPD)?"*
- **Formulating inclusion and exclusion criteria** – specific inclusion and exclusion criteria have been defined for sources that meet specific requirements – peer-reviewed publications, currency of information, clinical guidelines, and international standards.
- **Searching in scientific databases** - PubMed, Web of Science, Google Scholar, Scopus and others. Key terms and combined phrases have been formulated to aid in identifying relevant articles, clinical studies, treatment recommendations, and best practices: *„acute myocardial*

infarction," „nursing care," „comorbidities," „management," „best practices."

- **Selection of sources** in stage 1 – reviewing titles and abstracts, and in stage 2 – checking for relevance and quality.
- **Data extraction –** information is organized by themes, and both qualitative and quantitative summaries of the results have been prepared regarding treatment and care methods, strategies for managing comorbid conditions, roles of nursing care and the multidisciplinary team, as well as outcomes from the implementation of these practices.
- **Documenting the process and outcomes** related to strategies for managing cardiac conditions in comorbid patients, and the role of nursing care in the management of comorbid patients with AMI. The effectiveness of various approaches to managing cardiac care has been examined, along with how these approaches impact patient health and the contribution of nursing care within this context. Difficulties and opportunities for improving existing practices have been analyzed.
- **Conclusion verification –** the applicability of the results has been assessed, and gaps or areas requiring further research have been identified, along with recommendations for improving the practices for managing cardiac care in comorbid patients with AMI.

2. Study of the activities and care provided by nurses for comorbid patients with AMI.

A comparative analysis of the main concepts, theories, models, and approaches that shape nursing care practice for comorbid patients with AMI has been applied. The analysis of nursing care is conducted in the following sequence: the fundamental principles and tasks of nursing care are examined; specific challenges related to the management of comorbid conditions are analyzed; and the interactions between different diseases and their impact on patients' health status are established.

A comparative analysis of national and international clinical guidelines, standards, and protocols for the management of AMI and comorbid conditions issued by professional medical organizations has been conducted.

The aim of the theoretical analysis is to investigate and evaluate the existing theoretical concepts, models, and practices applicable for improving nursing interventions and coordination related to the management of cardiac care in comorbid patients with acute myocardial infarction.

II. Empirical research

1. Qualitative study among patients regarding health status, treatment, and care they receive.

The applied method for gathering information is in-depth interviews to obtain detailed and thorough data regarding the personal experiences, attitudes, perceptions, and opinions of comorbid patients with acute myocardial infarction. Patients were selected through purposive sampling, ensuring diversity in terms of age, gender, socio-economic status, and types of comorbid conditions (such as diabetes, hypertension, and chronic obstructive pulmonary disease). This approach facilitates a deeper understanding of patients' individual experiences and their perceptions of the treatment and care they receive.

The information gathering was conducted through informal conversations in a natural setting for the participants – in the hospital room. Conditions were created to ensure maximum freedom and spontaneous sharing of opinions and personal impressions. The participants in this study consisted of 30 individuals selected on a voluntary basis, following predefined criteria aimed at inclusiveness, i.e., the participation of individuals from all levels related to the provision of treatment and care in intensive cardiac practice. The selection process includes the following criteria:

- **Age group –** patients from different age categories (for example, young adults, middle-aged individuals, and elderly people) are included to evaluate how age influences perceptions and care needs;
- **Gender –** selection of patients from different gender categories to examine possible differences in perceptions and approaches to treatment;
- **Comorbid conditions –** patients with various comorbidities, such as diabetes, hypertension, and COPD, which may influence the approach to treatment and the care they receive;
- **Socio-economic status –** patients with varying social and economic status to investigate how this factor may influence access to healthcare services and the quality of care received.

For the purposes of the in-depth interview, a specific research instrument was developed – **an In-Depth Interview Questionnaire** (*Appendix 1*), with the option for additional questions and exploration of themes that arise during the discussion.

The interviews were conducted by the researcher from April 2023 to December 2023. Participants were personally invited by the researcher. At the beginning of each

interview, the purpose was explained, and the anonymity of the interviewees was ensured. An audio recording was made after obtaining verbal informed consent from the respondents, followed by transcription and qualitative analysis of the generated text. Each conversation lasted between 45 and 60 minutes.

2. Qualitative study among medical specialists regarding the effectiveness of existing practices and methods for managing care in patients with AMI.

The applied method for data collection is focus groups. The aim is to gather opinions and ideas from medical specialists regarding specific aspects of managing cardiac care for comorbid patients with acute myocardial infarction. Interaction among participants is encouraged to discuss opportunities for optimizing care. Participants in the focus group include medical specialists experienced in treating patients with AMI and comorbid conditions.

For the purposes of the focus group, a **Semi-Structured Questionnaire** was developed, which includes open-ended questions aimed at stimulating discussion and exchanging opinions (*Appendix 2*). The questions focus on the essence of cardiac care and the coordination among medical specialists, with the primary goal of identifying best practices and formulating recommendations for optimizing nursing and multidisciplinary care for comorbid patients with acute myocardial infarction (AMI). The focus group sessions last approximately 90 minutes. After each session, the recorded discussions are transcribed and analyzed.

3. Qualitative study among patients regarding the interactions between patients and medical specialists, as well as the effectiveness of treatment and care for acute myocardial infarction and comorbid conditions.

The applied method for data collection is observation, which enables the study of patients' behavior in the hospital environment and its impact on the treatment process.

The main aspects of the observation process include: examining the interactions between patients and medical specialists in the hospital environment; assessing the effectiveness of treatment and nursing care for patients with acute myocardial infarction and comorbid conditions; analyzing potential issues in communication, care coordination, and patients' perceptions of treatment.

The subject of the observation is patients with acute myocardial infarction who have comorbid conditions such as diabetes, hypertension, chronic obstructive pulmonary disease, and others. Patients were selected through purposive sampling,

including various demographic groups (age, gender, socio-economic status, and others).

The observation was conducted by the researcher in a real clinical setting. Predefined criteria were established, which include:

- communication between patients and the medical team;
- decision-making process;
- adherence to treatment recommendations;
- perception of the quality of care.

For the purposes of the observation, a ***Checklist for observation*** has been developed, designed to collect data in a systematic and objective manner (*Appendix 3*). The checklist includes the main aspects of observation. Detailed records have been made regarding the observed interactions, behaviors, and reactions of patients at various points during treatment. A template has been used to support systematic data collection on key indicators (communication, participation in treatment, satisfaction). Patients have been informed about the objectives of the study, as well as their rights to anonymity and data confidentiality.

4. Quantitative study among medical specialists regarding nursing activities and care related to cardiac care for comorbid patients with AMI.

The effectiveness of existing nursing interventions for patients with acute myocardial infarction (AMI) and comorbid conditions has been evaluated based on the opinions of medical specialists.

The quantitative method includes a direct individual survey among medical specialists from University Multiprofile Hospital for Active Treatment (UMHAT)/ Multiprofile Hospital for Active Treatment (MHAT) in the cities of Varna, Shumen, Dobrich, Burgas, Ruse, and Silistra – a total of 223 respondents, divided into two groups:

- **first group** – includes 125 nurses, senior and head nurses, as well as specialists from the Angiography department, providing activities and care in intensive cardiac care units where comorbid patients with AMI are hospitalized;
- **second group –** composed of 98 physicians conducting cardiological treatment for comorbid patients in intensive cardiac care units, some of whom are also specialists in the Angiography department;

For the purposes of the study, two questionnaires have been developed – a **Questionnaire for nurses** (*Appendix № 4*) and a **Questionnaire for physicians** (*Appendix № 5*).

The questionnaire for nurses aims to explore the professional behavior, management skills, and role of the nurse in providing cardiac care to patients with acute myocardial infarction (AMI) and accompanying comorbid conditions. The analysis of the opinions expressed by the healthcare professionals identifies the main needs, issues, and opportunities for development in nursing practice in this area.

The questionnaire for physicians has been developed to investigate the interaction between doctors and nurses in the process of cardiac care for comorbid patients with acute myocardial infarction (AMI). The survey assesses physicians' opinions regarding the role and involvement of the nurse in the team, her professional role, and opportunities for improving the quality of nursing care.

5. Quantitative study among patients regarding key characteristics, including demographic data, medical history, lifestyle, risk factors, and health status..

To identify key factors affecting the condition of patients with acute myocardial infarction and comorbid conditions, a direct individual survey was conducted among patients hospitalized in The First Cardiology Clinic with an Intensive Care Unit at UMHAT "St. Marina" EAD, Varna.

Inclusion criteria for the participants have been established:

- age over 18 years;
- patients with a confirmed diagnosis of acute myocardial infarction;
- patients with a confirmed diagnosis of acute myocardial infarction and comorbid conditions such as diabetes, hypertension, chronic obstructive pulmonary disease (COPD), chronic kidney disease, or other cardiovascular conditions that interact with the primary disease (AMI);
- to have provided informed consent to participate in the study;
- to have the ability to understand and follow the instructions for completing questionnaires or survey forms, as well as to communicate effectively with the researcher;
- to be hospitalized or under observation in the same healthcare facility during the study;
- patients must not suffer from serious mental illnesses that would hinder their participation in the study, as well as impede their ability to understand and cooperate with the researchers.

The exclusion criteria for participants include:

- patients who have not been diagnosed with acute myocardial infarction or for whom the diagnosis has not been confirmed by medical tests and analyses;
- patients who do not have at least one comorbid condition related to cardiological problems;
- patients suffering from serious mental disorders (e.g., schizophrenia, severe depressive disorders, or other psychoses) that may hinder their participation in the study or affect their ability to understand and follow instructions;
- patients who are unable to provide informed consent due to cognitive impairments, severe pain, or conditions that affect their ability to understand and make decisions regarding their participation in the study;
- patients who refuse to participate in the study, or those who are unable to provide consent due to physical or mental limitations that cannot be overcome with assistance from family members;
- patients with advanced stages of comorbid diseases, such as terminal stage renal failure, end-stage COPD, or oncological diseases, which may worsen the prognosis and compromise the reliability of the study results;
- patients with active cardiological conditions such as severe heart failure, valvular diseases, or other conditions that are not related to acute myocardial infarction.

For the purposes of the study, a **Questionnaire for patients** has been developed (*Appendix № 6*) to establish the lifestyle, dietary habits, physical activity, and health behaviors of patients with cardiovascular diseases, including acute myocardial infarction (AMI). Risk factors, socio-demographic characteristics, and the patients' awareness of their condition are being examined.

Anxiety and depression are common among patients with AMI and significantly impact physical recovery, adherence to therapeutic regimens, and the effectiveness of interventions. The assessment of symptoms was conducted using tests: **the Self-Assessment Questionnaire for Hospital Anxiety and Depression Scale (HADS)** (*Appendix № 7*) and **the Self-Assessment Depression Scale by W. Zung** (*Appendix № 8*).

The HADS self-assessment questionnaire is used in non-psychiatric settings and does not account for symptoms that may only be experienced by individuals with mental illness (Herrmann 1997). Developed in 1983 by Zigmond and Snaith as a tool for assessing anxiety and depression in hospitalized patients, the questionnaire has

been widely applied in clinical practice and research, particularly in the context of chronic diseases such as cardiovascular conditions, where emotional status plays a significant role in recovery.

For the quantitative assessment of depressive states, the self-assessment depression scale by W. Zung (Self-Rating Anxiety Scale, SAS) adapted into Bulgarian (Kokoshkarova, 1984) was used. Developed by William Zung in 1971, the scale is designed to objectively measure the subjective feeling of anxiety while also taking into account the psychological and somatic manifestations of the condition.

The inclusion of the assessment scales in this study is based on our research, which established their active use among a patient population similar to ours (Hristova I., Dimitrova A., Staikova Sv., Mitova M., Chaneva O., Atanasova M., Dzhambov A.), as well as the approval from the Research Ethics Committee at the Medical University – Varna.

1.2.4. Study organization

The study was conducted after approval from the Research Ethics Committee at the Medical University – Varna, with Decision №128 dated March 2, 2023.

To achieve greater accuracy, the core part of the study was conducted independently by the doctoral student. Collaboration was utilized with healthcare leaders (physicians, head nurses, and senior nurses) from University Multiprofile Hospitals for Active Treatment (UMHAT) and Multiprofile Hospitals for Active Treatment (MHAT) across the country. The selected collaborators were briefed in advance on the objectives, methodology of the study, and trained for working with the instruments (data protection notice for the participants, information for the respondents, informed consent form for participation, survey cards and questionnaires).

Stage	Activity	Place	Tools	Timeframe
Stage 1	Analysis of the problem's status – conducting a literature review. Formulation of the research hypothesis. Formulation of the aim and objectives of the	Varna	Review of scientific literature sources in the field of the dissertation, including articles, educational documentation, and publications (including international ones). Searching, reviewing, and analyzing scientific papers focused on the	January 2022 – November 2022

	study.		state of the problem.	
Stage 2	Defining the aims and objectives of the dissertation research; selecting appropriate methods; developing instruments for conducting the study.	Varna	Questionnaire for conducting in-depth interview (Appendix №1) Semi-structured questionnaire for focus group (Appendix №2) Observation checklist (Appendix №3) Questionnaire for nurses (Appendix №4) Questionnaire for physicians (Appendix №5) Questionnaire for patients (Appendix №6) Self-assessment questionnaire for anxiety and depression (HADS) (Appendix №7) Self-assessment scale by Zung (Appendix №8)	December 2022 – June 2023
Stage 3	Studies conducted using instruments approved by the Research Ethics Committee at the MU – Varna.	Varna, Shumen, Dobrich, Burgas, Ruse, Silistra	Appendices №1, 2, 3, 4, 5, 6, 7, 8	July 2023 – October 2023
	Conducting a study	Varna		April 2023 – November 2024
Stage 4	Processing and analysis of the data obtained using the selected analysis methods. Formulating the conclusions from the conducted research. Statistical processing and analysis of the	Varna	Statistical methods	October 2023 – November 2024

	results.			
	Conducting in-depth interviews, focus groups, and observations.	Varna	Questionnaire for conducting in-depth interview (Appendix №1) Semi-structured questionnaire for focus group (Appendix №2) Observation checklist (Appendix №3)	October 2023 – November 2024
Stage 5	Summarizing the results, formulating the overall conclusions, contributions, and recommendations derived from the dissertation.	Varna		March 2023 – December 2024

1.3. Research methods

1.3.1. Sociological methods

- ***In-depth interview*** to capture attitudes, behavior, social characteristics, and experience regarding the management of cardiac care in comorbid conditions with acute myocardial infarction.
- ***Focus groups*** to explore patients' opinion regarding perceptions study, attitudes, and patients' experiences among medical specialists about the impact of cardiac care in the treatment and recovery process..
- ***Observation*** to identify factors that influence the effectiveness of interventions and interactions with medical specialists.
- ***Questionnaire method*** to investigate the opinions of medical specialists and patients regarding the activities and care of comorbid patients with AMI.

1.3.2. Statistical methods

- ***Descriptive statistics*** **–** summarizes the main characteristics of the studied sample; calculates frequencies, percentages, means, and standard deviations of the data collected through the survey and observation
- ***Correlational analysis*** **–** establishes relationships between various factors, such as comorbidities and indicators of the condition of patients with AMI; identifies connections between comorbid conditions and the effectiveness of cardiac care.
- ***Regression analysis*** **–** determines the influence of various variables (such as age, gender, comorbidities) on treatment and care outcomes for patients with AMI; establishes the significance of the factors for the prognosis and management of these patients' conditions..
- ***Analysis of variance*** **–** evaluates the effectiveness of nursing interventions and the optimization of care for patients with AMI and comorbid conditions.

II. RESULTS AND DISCUSSION

2.1. Characteristics of the study participants

Research among medical specialists

The study investigated the opinions of 223 medical specialists providing care and activities for comorbid patients with acute myocardial infarction: nurses (n = 125) and physicians (n = 98) working in medical institutions in the cities of Varna, Shumen, Dobrich, Burgas, Ruse, and Silistra.

Table 1. Distribution of medical specialists by medical institutions

City / Medical institution	Nurses		Physicians		Total	
	number	%	number	%	number	%
Varna/UMHAT „St. Marina“	25	55.56%	20	44.44%	45	20.17%
Varna/MHAT – Varna to MMA	9	50.00%	9	50.00%	18	8.07%
Shumen/MHAT "Shumen"	13	46.43%	15	53.57%	28	12.55%
Dobrich/MHAT "Dobrich"	8	50.00%	8	50.00%	16	7.17%
Burgas/UMHAT "Burgas"	14	58.33%	10	41.67%	24	10.76%
Ruse/UMHAT "Medica Ruse"	25	60.98%	16	39.02%	41	18.39%
Ruse/UMHAT "Kanev" Ruse	20	57.14%	15	42.86%	35	15.69%
Silistra/MHAT "Silistra AD"	11	68.75%	5	31.25%	16	7.17%
Total	**125**	**56.08%**	**98**	**43.92%**	**223**	**100%**

The medical specialists included in this study represent 64.32% of all medical specialists working in medical institutions within the study area, providing representativeness for the sample (n = 375). The opinions expressed by the respondents can be considered with a high degree of reliability, allowing for

generalized conclusions regarding cardiac care for patients with acute myocardial infarction.

The age range of the surveyed medical specialists falls within the interval of 23 to 64 years (Fig. 1).

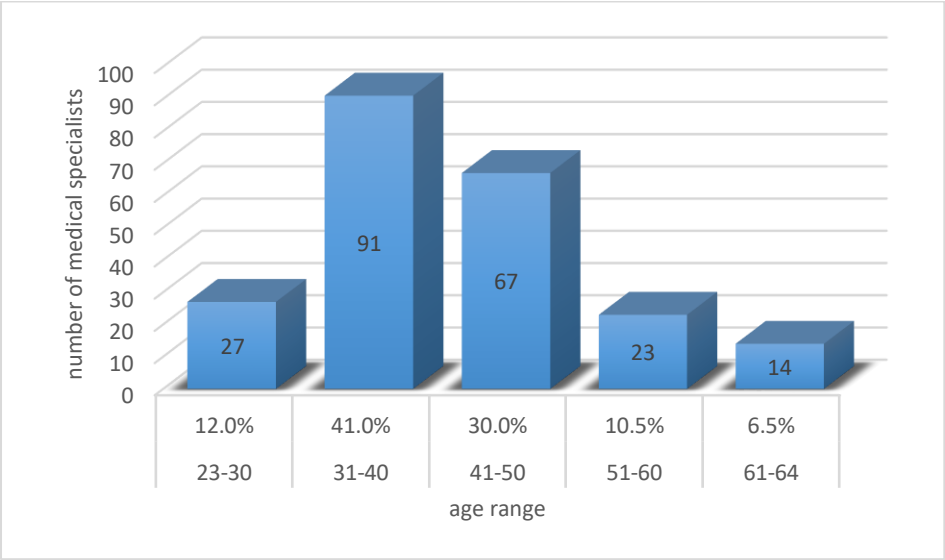

Figure 1. Distribution of surveyed medical specialists by age

The average age is 37.25 years (SD 5.7). The distribution by age periods shows the largest proportion of respondents between 31 and 40 years (41%), followed by those aged between 41 and 50 years (30%). This age representation ensures the relevance of the opinions regarding activities and care for comorbid patients in cardiology practice and the opportunities for implementing care management approaches.

Statistically significant differences in the average ages of physicians and nurses have been established ($p < 0.01$). Based on the collected data, it is revealed that specialists in the cardiology departments of medical institutions have substantial practical experience gained during their lengthy work tenure. This provides grounds to consider the opinions of this group of respondents as extremely valuable for the conducted study (Fig. 2).

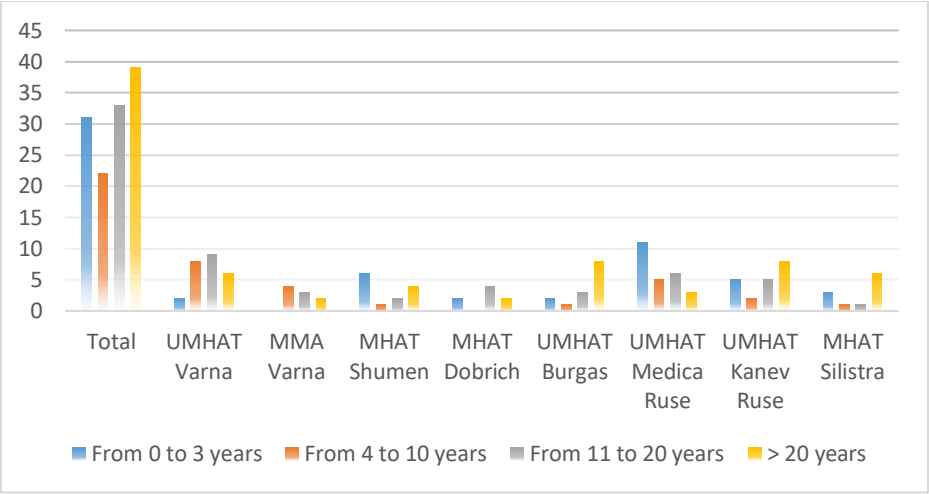

Figure 2. Distribution of medical specialists by professional experience

A significant portion of the medical specialists possess over 20 years of experience, categorizing them as experts in effective patient care management (41%). We assume that these specialists also have a better ability to cope with stressful situations and complex clinical cases. The survey includes physicians and nurses with professional experience ranging from 11 to 20 years (32%), followed by specialists with less than 10 years of experience (27%).

Through the conduction of an analysis of variance, a significant relationship has been established between the age group of medical specialists and the duration of their professional experience ($F = 44.506$; $p < 0.05$).

A statistically significant difference is found among the age groups based on professional experience. This relationship is statistically significant and strong ($r = 0.85$; $p < 0.01$), confirming that accumulated experience is a key factor in the quality management of care for patients with acute myocardial infarction and comorbid conditions. The strong correlation supports the theory that experience is crucial for making informed and accurate decisions in critical situations

The educational and qualification levels of nurses providing care for patients with AMI are a foundational factor in ensuring high-quality healthcare services. (Fig. 3).

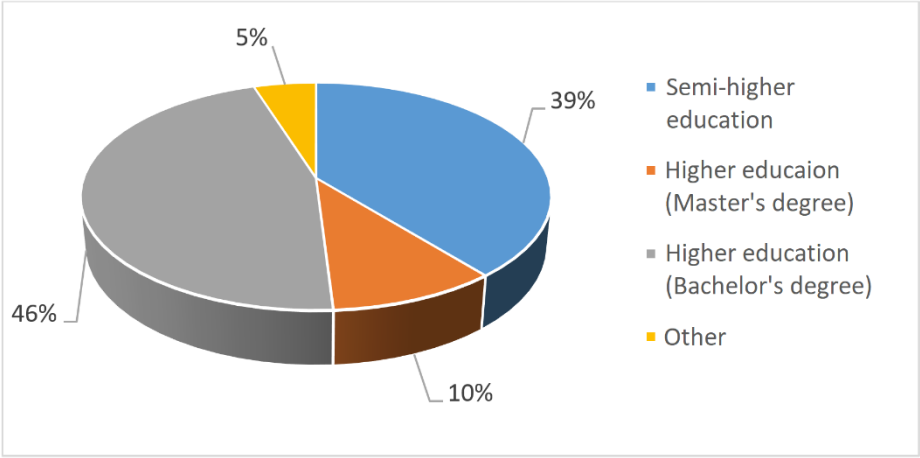

Figure 3. Distribution of nurses by educational and qualification degree

A large proportion of nurses hold a higher education Bachelor's degree (46%), followed by those with semi-higher education (39%). The Bachelor's degree is traditionally accepted as the foundational professional qualification in the field of nursing and is the primary educational standard for nurses in our country. In intensive and highly specialized sectors, nurses participate in complex clinical situations that require not only in-depth knowledge of diseases but also the ability to make quick and adequate decisions, which is achieved through continuous education. A concerning fact is that a small percentage (10%) of the surveyed group of nurses holds a Master's degree. We assume that healthcare professionals maintain their competence in knowledge, skills, and the ability to make quick, informed decisions through various forms of continuing education.

Patient profile and key factors related to their health

The socio-demographic characteristics of patients with acute myocardial infarction influence the planning and management of cardiac care. To identify the needs for individualized and effective care, parameters such as gender, age, place of residence, marital status, and educational level have been analyzed. The study encompasses a total of 200 patients diagnosed with acute myocardial infarction (AMI) who received treatment at The First Cardiology Clinic with an Intensive Care Unit at UMHAT "St. Marina" EAD in Varna, of which 67.0% are men (n = 134) and 33.0% are women (n = 66) (Fig. 4).

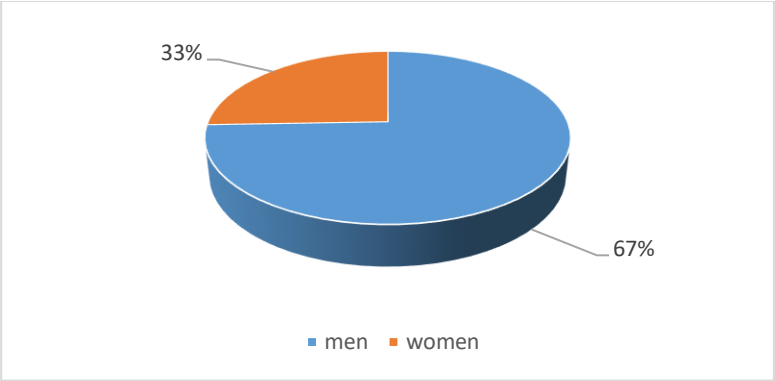

Figure 4. Distribution of surveyed patients by gender

The gender distribution among the surveyed patients indicates specific risk profiles. Men are more prone to atherosclerotic changes at an earlier age, while women often present with more severe symptoms after menopause. Age specificity directly affects the implementation of personalized approaches in care management and interventions, including early diagnosis and long-term prevention.

The average age of the participants is 64 ± 9 years. The age distribution of the patients reveals that the largest proportion (47%) consists of individuals aged between 46 and 63 years – a group that combines active professional engagement with increased exposure to risk factors such as insufficient physical activity, unhealthy eating habits, and chronic stress, as well as the presence of comorbidities. Patients over 64 years also represent a significant portion of the sample (35%), often exhibiting multimorbidity, including chronic conditions such as hypertension, diabetes, and chronic obstructive pulmonary disease (COPD). The management of cardiac care in these age groups requires an integrated approach focused on the accompanying diseases.

A large portion of the patients have comorbid conditions such as arterial hypertension (78%), diabetes mellitus (45%), and chronic obstructive pulmonary disease (COPD) (32%).

Among the studied individuals, the following distribution by education is observed: 18% have primary education, 54% have secondary education, and 28% have higher education. In the distribution by educational status, a significant proportion are patients with secondary and primary education (Fig. 5).

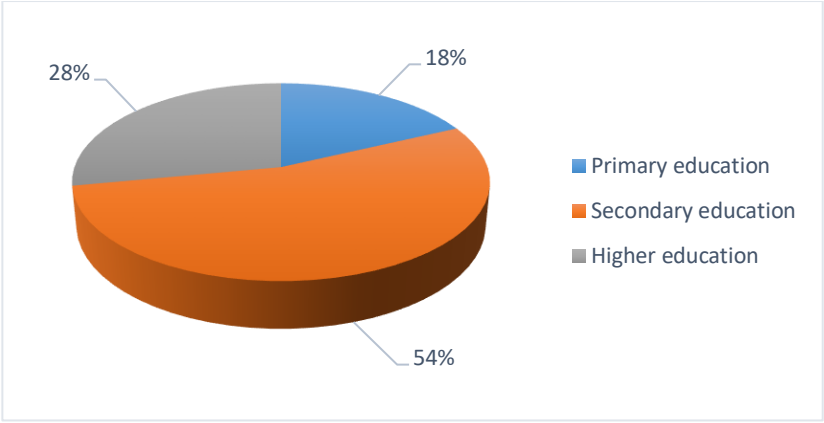

Figure 5. Distribution of patients by education

We assume that the group of patients with primary education may face difficulties in understanding medical information, which can affect the quality of care and their adherence to treatment. The majority of patients participating in the study have secondary education (54%). This is the largest group among the patients. The patient's education influences their recovery and participation in the treatment process.

The actively employed individuals constitute 35% of the sample, with a significant portion of them (62%) engaged in professions with a moderate level of physical activity. Retirees represent the largest group, accounting for 43%, while nearly one-quarter (22%) of the patients are temporarily incapacitated or unemployed (Table 2).

Table 2. Social status and education level of the patients

Employment status	Education level	Percentage of the total number of patients
Active employment	Primary education	6.3%
	Secondary education	18.9%
	Higher education	9.8%
Retirement age	Primary education	7.7%
	Secondary education	23.2%
	Higher education	12.0%
Temporarily incapacitated or unemployed	Primary education	4.0%
	Secondary education	11.9%
	Higher education	6.2%

A weak positive correlation is found between social status and education level among the patients ($r \approx 0.23$).

Patients from urban areas represent 72% of the sample, while 28% are from rural areas. The latter often experience difficulties in accessing healthcare, which may lead to late diagnosis and complications.

The leading comorbidity across all age groups is arterial hypertension (78%). Hypertension is commonly associated with cardiovascular diseases and requires special attention in management (Table 3).

Table 3. Patients by age groups and comorbid conditions

Age group	Frequency of main comorbid conditions	%
30–40 years old	arterial hypertension	78%
	lipid profile disorders	50%
	type 2 diabetes	30%
41–50 years old	arterial hypertension	78%
	type 2 diabetes	45%
	lipid profile disorders	50%
over 51 years old	arterial hypertension	78%
	chronic obstructive pulmonary disease	32%
	chronic kidney disease	18%

Lipid profile disorders are the second most common comorbidity among patients under 50 years old (50%). Nearly half of the patients suffer from type 2 diabetes, which is a significant risk factor for cardiovascular diseases (45%). A very strong positive correlation is established between age and the number of comorbid conditions. ($r \approx 0.994$).

As patients age, the number of comorbid conditions also increases, which is commonly observed among patients with cardiovascular diseases and comorbidity. The established strong correlation directs efforts towards early diagnosis and comprehensive care management for patients with multiple health issues. Elderly patients with cardiovascular diseases require intensive and specialized care that addresses the specifics of their health conditions.

Social and family factors can significantly influence both the emotional state and the motivation to adhere to treatment recommendations. Among the participants, 68% are married or in partnership, 20% are single, and 12% are widowers/widows. This structure emphasizes the importance of social support for patients' recovery.

The high comorbidity and limited access to healthcare services in rural areas highlight the need for targeted interventions to improve the prevention, diagnosis, and management of cardiac care. There is a statistically significant difference in access to healthcare services between patients in urban and rural areas $\chi 2 = 17.54$ ($\alpha = 0.05$).

2.2. Impact of lifestyle and risk factors on the health status and prognosis of comorbid patients with acute myocardial infarction

2.2.1. Study of lifestyle-related factors affecting the health status of patients with cardiovascular diseases

Cardiovascular diseases are a leading cause of morbidity and mortality worldwide, posing a significant challenge for healthcare systems and societies. Dietary habits, physical activity levels, smoking, alcohol consumption, and the ability to cope with stress are decisive components for cardiovascular health and the overall well-being of patients. The study aims to identify key factors affecting the condition of comorbid patients with acute myocardial infarction. A direct individual survey was conducted among patients hospitalized in The First Cardiology Clinic with an Intensive Care Unit at UMHAT "St. Marina" EAD in Varna (n = 200). The questionnaire includes questions related to health status and significant risk factors that are closely related to the course of the disease and recovery following the incident.

Risk factors such as smoking, alcohol consumption, dietary habits, and body mass index (BMI) significantly influence the increased risk of developing acute myocardial infarction (AMI). Early detection and management of these factors are crucial for secondary prevention and the long-term health of patients. The data identifies smoking as a significant modifiable risk factor that has a substantial impact on patients' health status and prognosis. A significant portion of the patients (40%) are active smokers (Fig. 6).

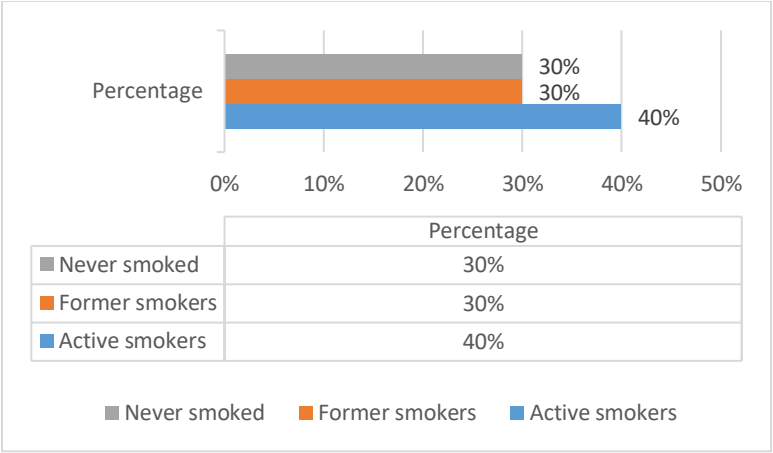

Figure 6. Distribution of patients according to the risk factor of smoking

The assessment of alcohol consumption habits shows that nearly half of the patients regularly consume alcohol (49%), one-third do so occasionally (30%), while almost a quarter (21%) are abstainers (Fig. 7).

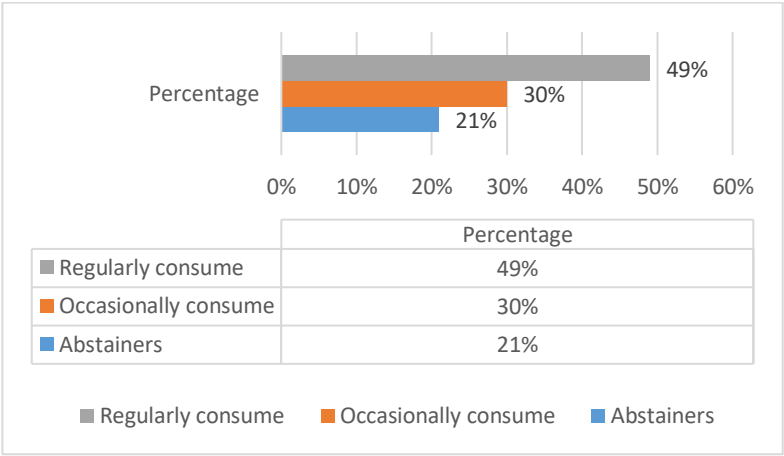

Figure 7. Distribution of patients according to alcohol consumption

The survey includes a clarifying question regarding the type of alcohol – beer, wine, and spirits. It is noteworthy that patients who consume alcohol regularly often include one or more of the three types of alcoholic beverages.

Processed foods dominate the dietary habits of patients, which may be an indicator of an increased risk for developing health problems, including cardiovascular diseases and diabetes (45%). A concerning fact is that only one-third of patients (30%) consume fresh fruits and vegetables, with poor nutrition remaining a key risk factor for the development of cardiovascular diseases (Fig. 8).

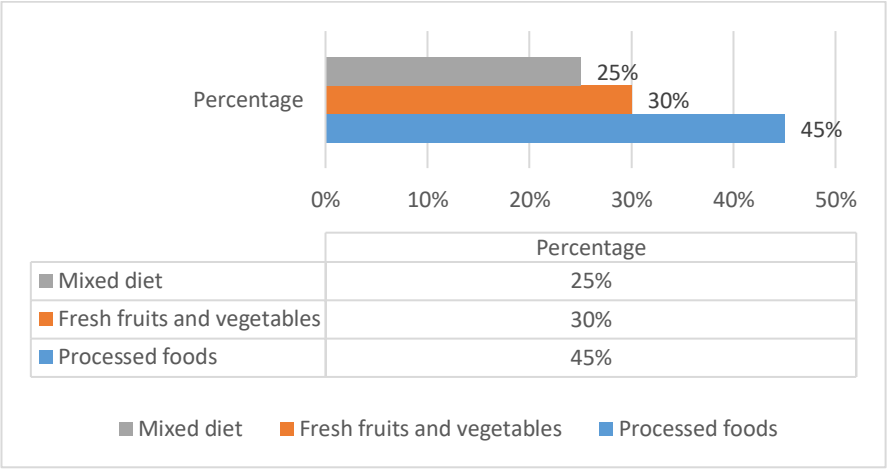

Figure 8. Distribution of patients according to dietary habits and associated health risks

Processed foods typically contain a significant amount of salt, which can be extremely dangerous to health. Salt consumption has been found to exceed recommended levels in more than half of the patients (65%), constituting a significant risk factor for hypertension and cardiovascular diseases. The correlation between dietary habits and salt consumption is highly statistically significant ($\chi^2 = 955.43$).

Body mass index (BMI) is an important indicator for assessing health status, as it reveals significant data regarding the risk of metabolic and cardiovascular diseases. In this study, more than half of the patients fall above the normal weight range – with 40% being overweight and 25% classified as obese. These are serious indicators related to the risk of developing cardiovascular and metabolic diseases. The fact that only 35% of patients have a body weight within the normal range is also concerning, as it suggests that the majority of patients do not adhere to recommendations for a healthy lifestyle and diet.

The results from the survey confirm the high prevalence of modifiable risk factors such as smoking, excessive salt consumption, and poor dietary habits. Patients who are overweight and obese show a significantly higher frequency of comorbid conditions such as hypertension and diabetes, which complicates the recovery process.

The investigation of the impact of family history on the development of cardiovascular diseases deserves attention (Fig. 9).

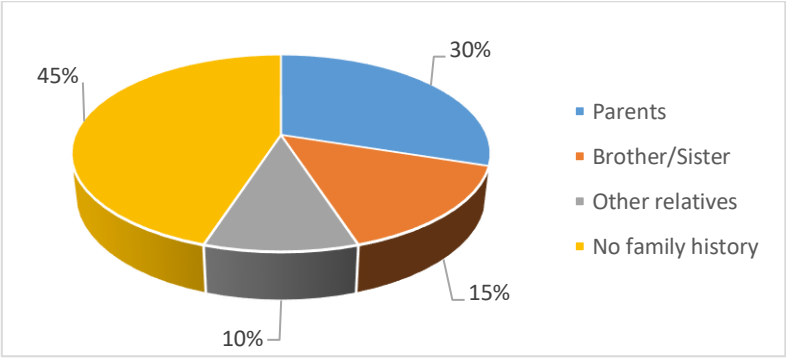

Figure 9. Distribution of patients according to family history

More than half of the patients have a family history of cardiovascular diseases (55%). The conducted study found that one-third (30%) of the participants report having a parent with hypertension or coronary heart disease. Additionally, 15% of the patients have a brother or sister affected by similar cardiovascular conditions. Furthermore, 10% of the respondents indicate that there have been cases of early death related to a cardiac incident in their families. These results underscore the significance of genetic predisposition in the development of cardiovascular diseases.

Workplace stress can also negatively affect health. The study establishes that the professional environment has a significant impact on the health status of patients (Fig. 10).

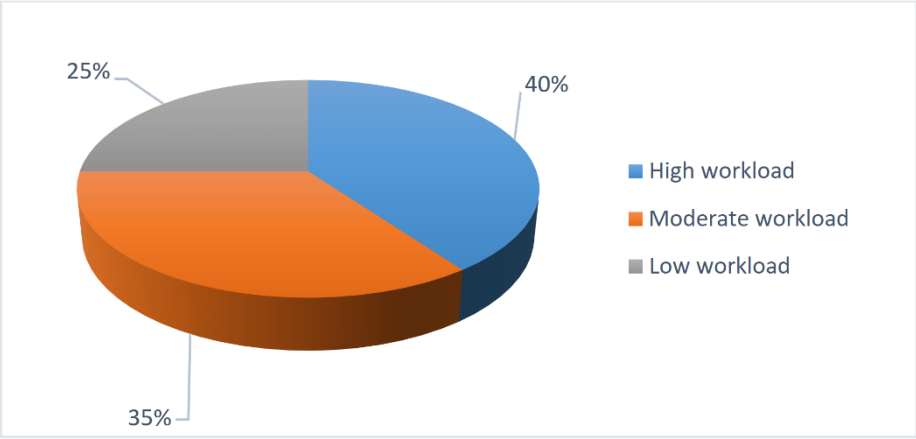

Figure 10. Distribution of patients according to occupational workload

Close to half of the participants indicate that they are engaged in professions associated with high stress and high psycho-emotional workload (40%), while one-quarter report professional engagement with low workload (25%). According to the formula for calculating the Occupational Stress Index (OSI), the average OSI for the group is calculated to be 2.15, indicating predominantly moderate to high occupational workload.

Patients who regularly measure their blood pressure (daily or weekly) demonstrate better awareness and active management of their condition (Fig. 11).

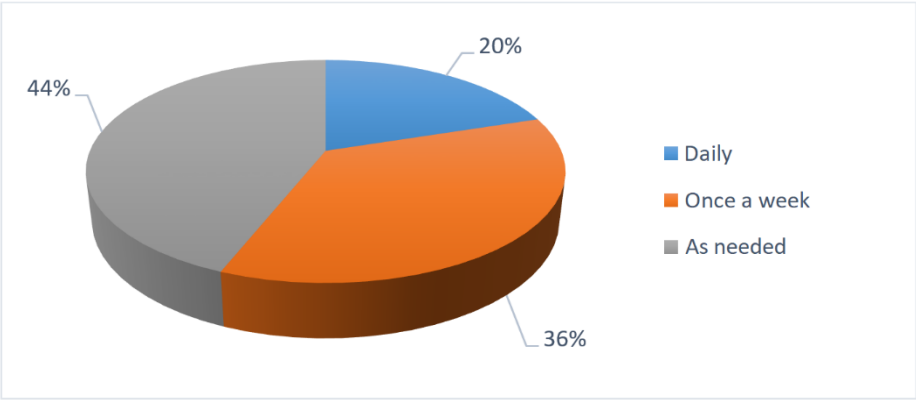

Figure 11. Frequency of blood pressure monitoring

Monitoring blood pressure is an important element for assessing cardiovascular health, preventing hypertension, and related conditions. A good habit for self-assessment of health status is demonstrated by the almost one-third of patients who report weekly monitoring of their values (36%). A lack of active engagement in their health or insufficient awareness of the importance of regular monitoring is reflected in the responses of a significant portion of patients who reported measuring their blood pressure only during doctor visits or when experiencing symptoms (44%). The behavior of these patients is risky, as the late detection of changes may lead to serious complications (Table 4).

Table 4. Frequency of blood pressure measurement and physician visits

Frequency of blood pressure measurement	**Visits over 3 months (n)**	**Visits over 6 months (n)**	**Visits only as needed (n)**	**Total number**
Daily	5	7	8	20
Once a week	9	13	14	36
Only at the physician/complaints	11	15	18	44
Total	**7**	**35**	**40**	**200**

The average interval between visits to a specialist is 7.5 months, indicating a relatively low level of health monitoring. Patients who regularly measure their blood pressure tend to visit the cardiologist more frequently for monitoring their health status, which may lead to better control of the risks associated with cardiovascular diseases ($\chi^2 = 8.13$, $p > 0.05$).

Patients' health behavior is strongly influenced by their awareness and access to healthcare services. A significant portion of patients do not recognize the seriousness of their condition or have partial awareness (Table 5). The results indicate that a large number of patients do not regularly measure their blood pressure and do not visit a cardiologist after discharge, which increases the risk of complications. The low frequency of follow-up visits highlights the need for improved health education and the establishment of mechanisms for regular monitoring.

Table 5. Relationship between awareness and health factors

Level of awareness	Family history		Unhealthy eating habits		Irregular doctor visits	
	number	%	number	%	number	%
Full awareness	23	41.07	21	36.21	15	35.71
Partial awareness	10	17.86	12	20.69	8	19.05
Lack of awareness	23	41.07	25	43.10	19	45.24

The low frequency of follow-up visits highlights the need for improving health education and establishing mechanisms for regular monitoring.

2.2.2. Analysis of the condition in patients with acute myocardial infarction

The assessment of the condition in patients with acute myocardial infarction provides a framework for developing individualized care strategies and nursing interventions. The main aspects related to the patient's condition include clinical manifestations, risk factors, diagnostics, interventions, and recovery, all of which directly influence the process related to nursing care management. We investigated the frequency of the primary symptoms reported by patients, as well as their subjective assessment of the intensity and circumstances under which these symptoms occur (Fig. 12).

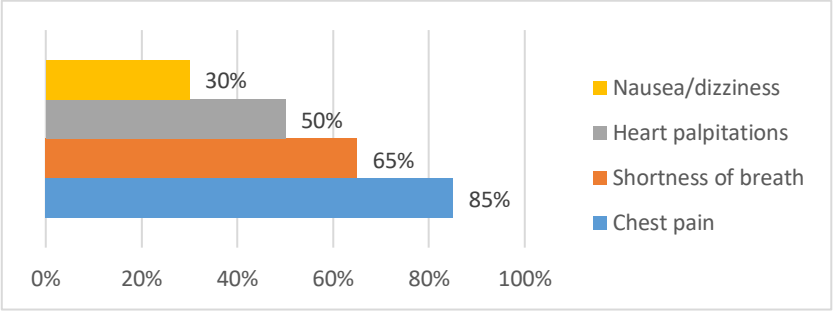

Figure 12. Clinical symptoms

The data indicates that chest pain remains the primary indicator of acute myocardial infarction (AMI) (85%), while symptoms such as shortness of breath (65%), heart palpitations (50%), and nausea or dizziness (30%) may occur with lower frequency but are equally significant for diagnosis. Patients with shortness of breath (n = 130) often report accompanying chest pain (85%), indicating a strong correlation between the two symptoms. The observed frequencies of the symptoms (chest pain, shortness of breath, heart palpitations, and nausea) are highly significant and different from the expected uniform distribution. The assessment of the patient's condition underscores the need for a personalized approach in nursing practice and also provides a basis for long-term monitoring and support aimed at preventing recurrent cardiac events.

Physical exertion is a primary triggering factor for the symptoms of acute myocardial infarction (AMI) in the majority of patients (60%). Patients often report nonspecific symptoms that have gone unnoticed until the onset of AMI (Fig. 13).

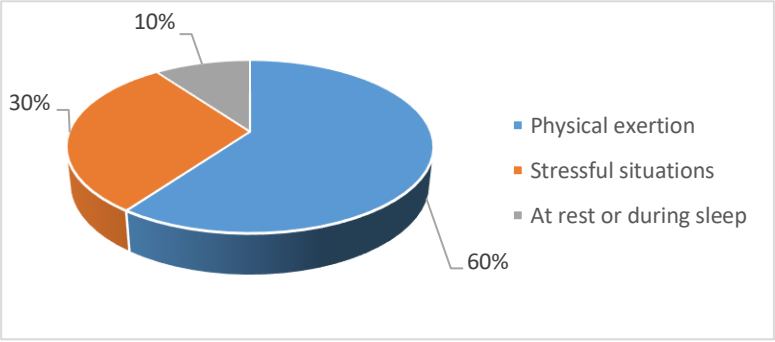

Figure 13. Distribution of circumstances for the onset of symptoms in patients with AMI

It is important to note that this is a significant indicator for patients who are physically active or work in professions with high physical demands. Emotional and psychological stress is the second most commonly reported trigger (30%). Symptoms occurring at rest or during sleep are relatively rare, but often serve as a serious indicator of the severity of the condition (10%).

Access to medical care is a critical aspect in the treatment of AMI, as the time from the onset of symptoms to receiving medical care significantly impacts the patient's prognosis. The distribution among the various modes of transportation is presented in figure 14.

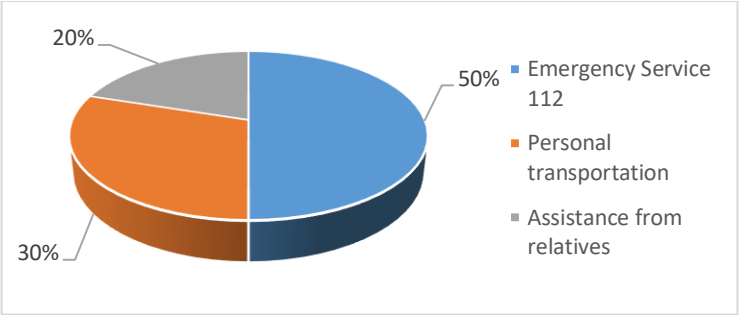

Figure 14. Transportation used to the medical facility

These data indicate that, despite the availability of emergency services as a primary mode of transportation, a significant portion of patients utilize personal resources, which may increase the risk of delays in treatment.

Patients' responses from the study indicate an average time from the onset of symptoms to arrival at the hospital of 3.5 hours (Fig. 15).

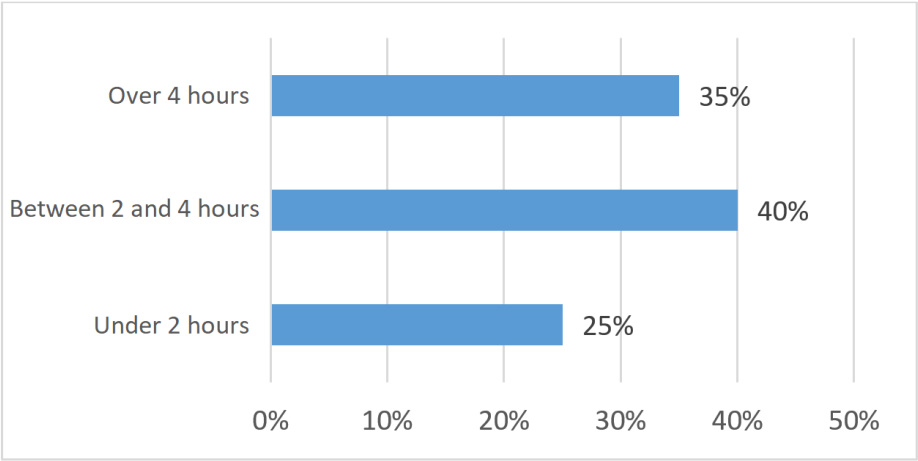

Figure 15. Reaction time in patients with acute myocardial infarction

The greatest difficulty reported by patients is a lack of knowledge regarding the symptoms of acute myocardial infarction and their seriousness (40%). Among the main reasons for delays are difficulties in accessing emergency services (30%), transportation problems in remote areas (20%), and other psychological barriers (10%). Patients with limited access to healthcare services often postpone treatment,

leading to worse clinical outcomes. The results confirm that the time to receive medical assistance is a significant factor in the effectiveness of treatment for acute myocardial infarction.

2.3. The nurse in cardiology intensive care-practices and challenges

2.3.1. Education, competencies, and challenges in contemporary practice

Nursing practice in cardiology is a fundamental component of the overall management of care for patients with acute myocardial infarction. Quality healthcare requires responsible interaction among medical teams, clinical monitoring, assessment of patients' conditions, and the implementation of standardized interventions. The role of the nurse and the challenges in practice have been assessed through a study of the opinions of medical specialists (n = 223) working in care structures for comorbid patients with acute myocardial infarction.

Professional experience and adaptation

The professional experience and adaptation of nurses are key factors for the effectiveness of the care provided in intensive cardiac care units (ICUs). Work experience, skills, and the ability to quickly adapt to a dynamic working environment influence the quality of care for patients.

The data reveals a positive trend regarding the adaptation of nurses to the working environment in the Intensive Cardiac Care Unit (Fig. 16). The working environment in intensive cardiac care units across most healthcare institutions is well-structured and provides appropriate conditions for the integration of new staff (67.2%). Nearly one-quarter of the surveyed nurses indicate a period between 6 and 12 months (21.6%). We consider this to be a normal adaptation period, especially in units with high specialization and workload. A prolonged adaptation period of over 1 year is reported by a relatively small number of participants in the survey (11.2%), which may signal the need for additional attention to the individual needs of newly hired healthcare professionals. The average adaptation period is calculated to be 4.3 months, confirming the relative quickness of the integration of new nurses.

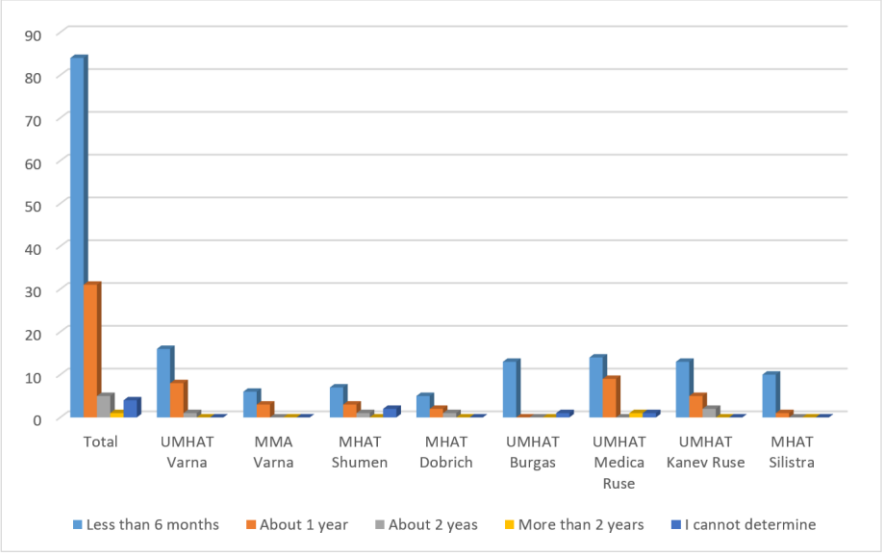

Figure 16. Adaptation period in the work process

Role of mentorship

Effective mentorship is an invaluable tool for staff retention and achieving high-quality healthcare. A significant portion of the respondents indicate that having a mentor facilitates their adaptation to the work environment (71.2%). This demonstrates the importance of having structure and support during the onboarding of new employees (Fig. 17).

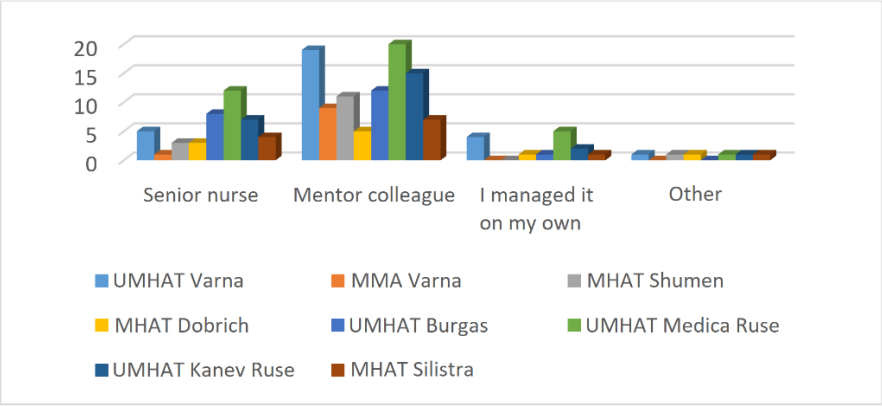

Figure 17. Support for nurses during their adaptation to the work environment

The majority of nurses indicate that they have relied on a colleague mentor. This is particularly evident at UMHAT Medica Ruse, where this method is most prevalent. This underscores the importance of mentorship for the integration of new employees. In some healthcare institutions, the senior nurse plays a significant role in providing support.

Professional training and qualification

Cardiology is one of the most dynamically developing medical fields, where technologies and scientific advancements continually transform approaches to diagnosis, treatment, and monitoring of patients. The results of the survey establish the basic qualification of nurses as a good starting point for working in cardiology; however, it is often insufficient for addressing the specific conditions and needs of patients. Additional training is crucial for developing professional qualities and confidence in practice (92%).

In our opinion, the implementation of mandatory continuous education and certification programs tailored to the needs of cardiology units could significantly improve the quality of work.

In response to the question, "Is additional qualification necessary for a nurse to work in the ICU?" nearly all nurses confirm the necessity (Table 6). The high risk and severity of cases require specialized knowledge and skills for effective practice.

Table 6. Need for additional qualification

	MHAT Silistra	UMHAT Varna	MMA Varna	MHAT Shumen	MHAT Dobrich	UMHAT Burgas	UMHAT Medica Ruse	UMHAT Kanev Ruse	Total
Yes	10	22	7	9	8	14	17	17	104
No	1	1	2	1	-	-	5	3	13
I cannot determine	-	2	-	3	-	-	3	-	8

A formula has been used to assess the training needs, where P_o is the percentage of those wishing for training, N_w is the number of those wishing for training, and N_t is the total number of respondents. As a result, 83.2% of nurses express the need for additional qualifications.

The need for additional qualifications among medical specialists is a frequently discussed topic in improving the quality of cardiac care. Nearly all nurses (92%) express a desire for further training (Fig. 18).

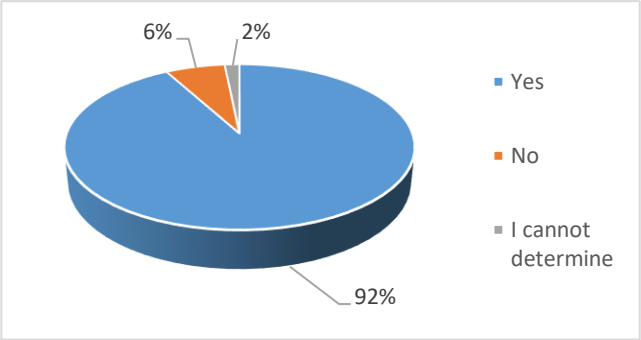

Figure 18. Desire for further training (according to nurses)

A large portion of physicians believe that nurses should possess additional qualifications to work in the ICU (83.67%). Nearly half of them (45%) prefer short-term courses and training as an effective form of education for nurses. Specialization is preferred by almost one-third (28%), while participation in scientific forums and workshops accounts for 17%. A very small number of respondents consider master's and doctoral degrees as alternatives for nurses – 8% and 2%, respectively.

No statistically significant difference is found between the responses of physicians and nurses regarding the necessity of additional qualifications for work in intensive cardiac care units. ($\chi^2 = 2.89$, $p > 0.05$). The analysis confirms the importance of the specific skills and knowledge required when working with critically ill patients.

To assess the relationship between the professional experience of physicians and their opinion regarding the necessity of additional qualifications for nurses, a correlation coefficient (r) was calculated. The results reveal a coefficient value of $r = 0.72$, indicating a strong positive relationship. This suggests that physicians with longer professional experience place greater importance on the need for further training.

The medical specialists participating in the survey express a strong desire for continuing education (Fig. 19).

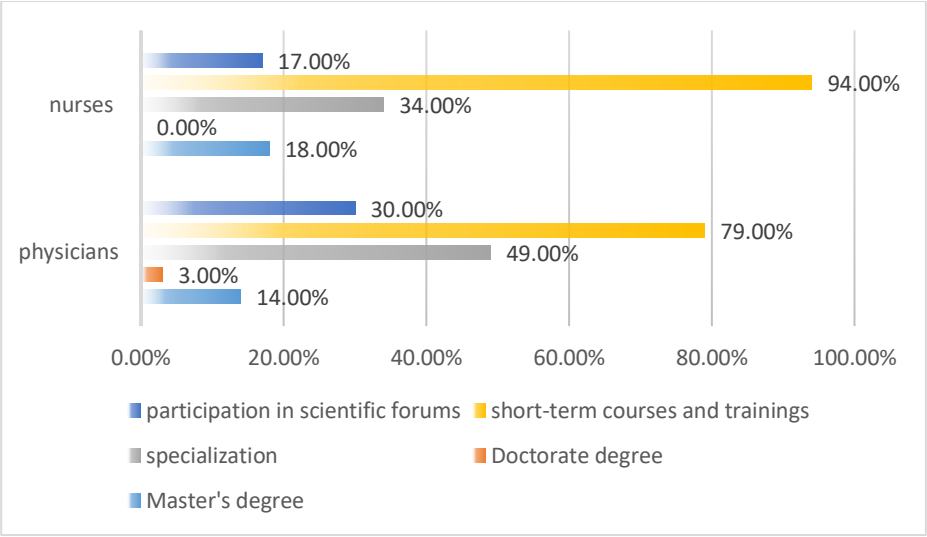

Figure 19. Involvement in various forms of continuing education

Short-term courses are the most preferred form of education (94% for nurses, 79% for physicians). In our opinion, medical specialists prefer forms of education that allow for the rapid acquisition of new skills and knowledge, which can be immediately applied in practice. This type of training also provides flexibility in working hours, which is particularly important for the specifics of cardiology departments. Nearly half of physicians express a preference for enhancing their knowledge and experience in specific practical areas (49%), while for nurses, it is slightly over one-third (34%). Interest in master's programs is low (18% for nurses, 14% for physicians). We assume that being away from practical work for an extended period is not a preferred form of education.

The calculated correlation coefficient ($r = 0.948$) between the responses of doctors and nurses regarding different forms of continuing education indicates a very strong positive correlation, meaning that the preferences of both groups for educational formats are similar. The p-value (0.014) indicates that this relationship is statistically significant, confirming that there is a real and meaningful correlation between the responses of doctors and nurses ($p < 0.05$).

The results show that, despite the general awareness of the need for continuing education, the level of engagement and preferences for different forms of education vary significantly among the surveyed nurses. Based on the values of variance (742.49) and standard deviation (27.23%), there is considerable variability in the data,

indicating the need for an individualized approach to the education and professional development of nurses.

Teamwork in the care of patients with acute myocardial infarction

The nurse plays a central role in the management of cardiac care, with responsibilities ranging from direct medical interventions to psychological support and team coordination. We analyzed the results of the study related to decision-making autonomy, teamwork, and the significance of various nursing activities.

A large proportion of nurses feel confident in making independent decisions within their acquired competence (72%), while 28% prefer consulting with a doctor or a colleague with more experience. Teamwork is rated as "very important" by the participants (87%), highlighting the key role of coordination within the multidisciplinary team (Fig. 20).

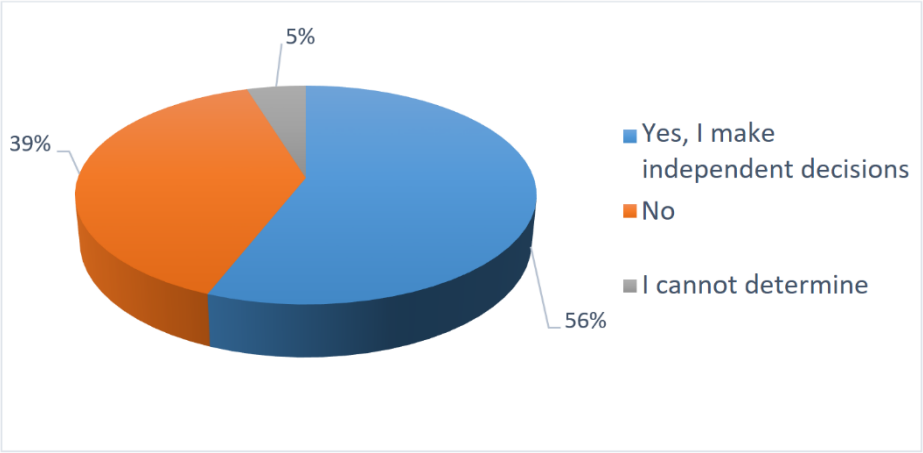

Figure 20. Independence in decision-making

The relationship between physicians' responses and nurses' participation in the work process demonstrates varying levels of initiative and independence within the team. Nurses who recognize the importance of additional training feel more confident in their ability to make independent decisions. The correlation coefficient (r) between the awareness of the need for training and confidence in independent decision-making ranges from 0.6 to 0.7, indicating a moderate positive correlation.

We were particularly interested in evaluating the significance of various nursing activities in the care of comorbid patients with acute myocardial infarction. The participants in the survey were asked to rate the key activities in nursing practice on a scale from 1 (not important) to 5 (very important). The arithmetic mean score for each activity was calculated using a formula, where X_i is the assessment given to a specific activity by the i-th participant, and n is the total number of participants (Table 7).

Table 7. Evaluation of the significance of nursing activities

Activity	**Average assessment $\overline{X}$**	
	physicians	**nurses**
obtaining informed consent	4.8	4.3
establishing communication with the patient and their relatives	4.7	4.8
patient and family education	4.5	4.6
assessment of the patient's condition	4.7	4.8
adaptation of the patient and relatives to the new lifestyle	4.4	4.7
providing healthcare related to the patient's acquisition of independence	4.3	4.8
providing hygiene care	4.3	4.5
providing psychological support	4.7	4.5
infection management	5.00	4.3
fulfillment of physician’s prescriptions	5.00	4.3
teamwork	5.00	4.5
adherence to workplace safety	4.8	4.8
ensuring patient safety	4.6	4.7
self-improvement	4.7	4.4

cost optimization and efficiency	4.6	4.3
conducting scientific research	4.7	4.3
mentorship	4.7	4.5

Medical professionals place great importance on several key activities in nursing practice. When comparing the results, physicians tend to assign higher ratings to these activities. This group of respondents rated activities related to infection management, implementation of physician prescriptions, and teamwork with the highest score (5.00). While nurses acknowledge the significance of these activities, they assign them slightly lower ratings, possibly perceiving them as part of their routine daily tasks rather than high-priority responsibilities, as physicians do. The activities that nurses rate the highest include patient condition assessment (4.8), patient and family adaptation to a new lifestyle (4.7), and providing healthcare services to support patient independence (4.8). The responses from both physicians and nurses confirm the interdependence and collaboration between these two professional groups in delivering comprehensive and high-quality patient care. The differences in responses for certain activities, as well as the similarities in others, highlight the importance of teamwork and cooperation in coordinating treatment, identifying patient needs, and optimizing the recovery process.

The trust that physicians have in nurses in clinical practice is reflected in their responses to the question: "In which of the following activities do you trust the nurse? (Fig. 21). The percentage of trust was analyzed using a confidence interval formula. The calculations demonstrated a high degree of reliability in the assessments, with the following parameters used: $\bar{p}$ – average percentage of trust, Z – critical value for a 95% confidence interval (Z = 1.96) and N – number of participants (total number of responses given).

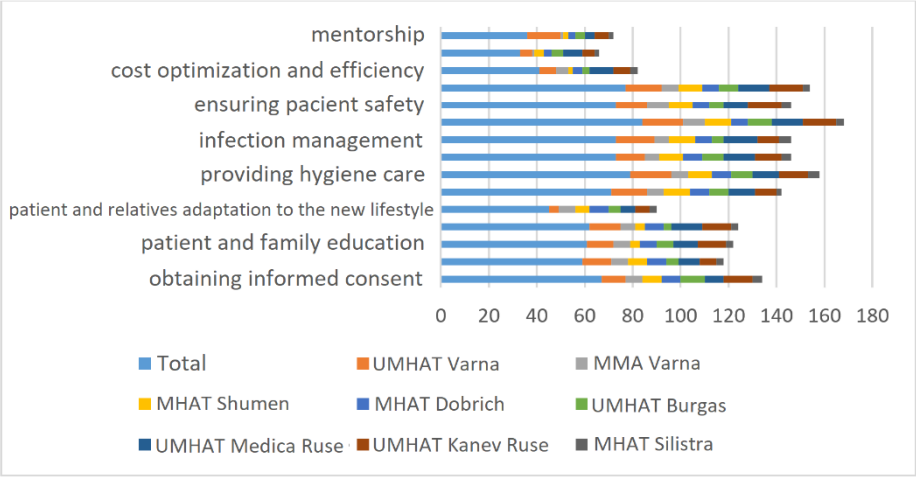

Figure 21. Trust in nurses when performing activities

Physicians place the highest trust in nurses when executing orders (85.71%), providing hygienic care (80.61%), and working in emergency situations (78.57%). The results indicate a high level of trust in nurses when performing routine but critical activities related to patient health and safety. The lowest trust is noted for activities such as conducting research in nursing (33.67%) and cost optimization and efficiency (41.84%). Physicians believe in the nurses' abilities to handle critical tasks such as executing orders (85.71%), providing hygienic care (80.61%), and working in emergencies (78.57%). The average trust level towards nurses is 67.8%. The results underscore the high level of trust physicians have in nurses, especially in critical areas like patient monitoring and infection management.

According to the perceived role and involvement of nurses in the care process for patients with acute myocardial infarction (AMI), respondents in both groups (physicians and nurses) evaluate the significance of this role as crucial for the quality of care provided and the final patient outcome (Fig. 22).

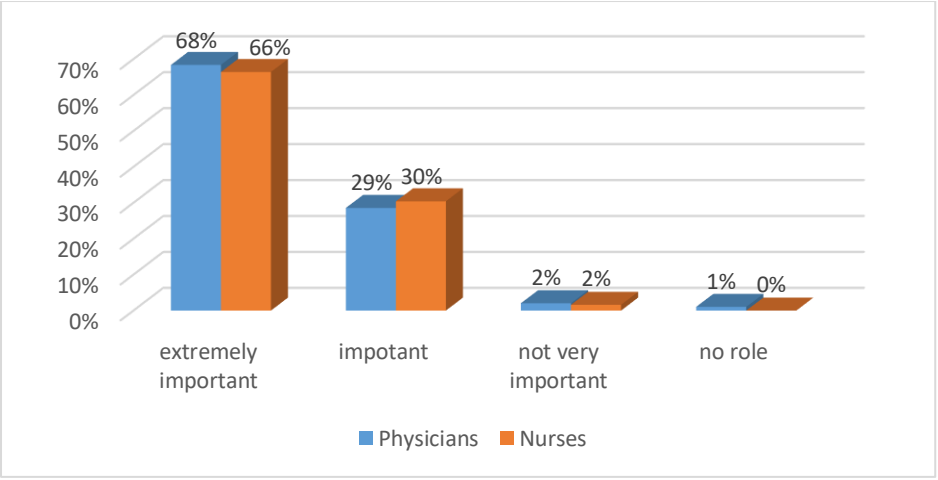

Figure 22. Significance of the nurse's role in patient care

Medical professionals share a similar perspective, emphasizing the essential role of nurses in patient monitoring, therapy administration, team communication, and emotional support for patients and their families. Nearly all respondents rated this role highly (physicians – 97%, nurses – 96%), highlighting the collaboration and support for the nursing profession in clinical practice.

The main causes of conflicts identified by the respondents are presented in Figure 23.

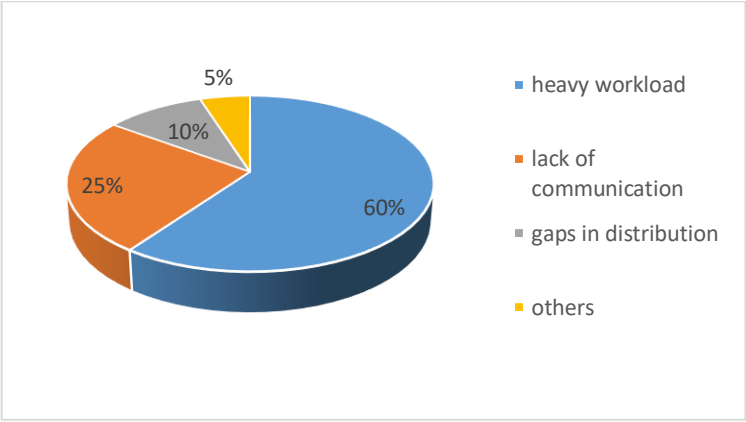

Figure 23. Conflicts causes

The statistically significant distribution of conflict causes highlights critical areas for intervention. (Table 8).

Table 8. Analysis of the root causes of conflict

Conflicts causes	O_i	E_i	$(O_i - E_i)^2/E_i$
Heavy workload	90	37.5	68.25
Lack of communication	38	37.5	0.01
Gaps in distribution	15	37.5	13.25
Others	7	37.5	28.05

Management errors in cardiology care are directly linked to the quality of interdepartmental communication and to the perception of these errors by physicians with varying levels of experience. Study participants with over 20 years of experience (27.55%) were more likely to assess conflicts as "insignificant" (16.33%), while physicians with less experience were more inclined to perceive conflicts as "major" (17.35%).

To assess the potential relationship between physicians' work experience and their evaluation of conflicts related to errors in the management of cardiac care, Spearman's correlation was calculated. The variables included in the analysis were years of experience (categorized into four groups) and conflict evaluation (categorized into three groups). The correlation between years of experience and conflict evaluation was very weak ($\rho = 0.032$), which shows that there is no significant dependence between these two variables. Additionally, the p-value of the calculated correlation is 0.906, which is significantly greater than the significance level of 0.05, indicating that the correlation is not statistically significant.

These results suggest that the length of service of doctors is not related to their perception of conflicts related to errors in the management of cardiological care, which may indicate that other factors, such as team dynamics or organizational aspects, play a more significant role in creating conflicts in this context.

According to one-quarter of doctors, a significant portion of conflicts are due to management errors (25%). A weak positive correlation is found between the professional experience of doctors and their assessment of the quality of healthcare

(ρ=0.032). The length of service is not related to significant differences in perceptions of the quality of nursing care, and the results are not statistically significant ($p > 0.05$).

These results suggest that there are likely other factors influencing the assessment of the quality of healthcare..

2.3.2. Optimizing nursing care for comorbid patients with cardiovascular diseases

The effectiveness of existing nursing interventions for patients with acute myocardial infarction (AMI) and comorbidities has been evaluated through the opinions of medical professionals working in the field of cardiology who have direct experience in the care of comorbid patients with acute myocardial infarction. The applied method for collecting information is a focus group, through which the strengths and weaknesses of the practices are identified, as well as opportunities for their improvement. **A semi-structured focus group questionnaire** has been developed on the topic: Optimizing nursing care for comorbid patients with cardiovascular diseases *(Appendix 2).*

To recruit participants, recommendations from clinic leaders were followed. Medical specialists providing various levels of care for patients with AMI were selected. In total, 26 participants were chosen, distributed into 4 focus groups, each with 6-8 participants (65% nurses, 25% physicians, and 10% physiotherapists). All participants were informed about the study's objectives and signed a consent form. The discussions were conducted in person by the doctoral candidate, with active guidance of the conversation in alignment with the study's goals. A supportive and professional environment was created to encourage the sharing of opinions, experiences, and ideas.

Effective communication is identified as a key factor in successful cardiological care, especially for patients with AMI and comorbid conditions. Nurses, due to their direct role in daily patient care, are integral to building trust and cooperation between patients and medical professionals. They often notice small but clinically significant changes in patients' conditions, which underscores the need for quick and effective communication: *„we are often the first to notice small yet significant changes in the patient's condition. This requires us to communicate quickly and effectively with doctors and other specialists "*.

The participants in the focus groups identified several key issues in communication, with the main one being insufficient awareness. The discussion highlighted the view that lack of awareness and limited access to medical documentation hinder care coordination and treatment planning: „*the lack of access to*

complete medical information from the documentation sometimes delays the treatment process and worsens communication between teams".

It was proposed to introduce integrated medical documentation systems that would improve access to up-to-date information and speed up decision-making. Differences in communication skills among nurses impact the effectiveness of interactions. Participants emphasize the importance of specialized training for developing effective communication skills: *„there is a need for more effective organization and additional training, particularly in patient assessment, which is of utmost importance for a successful outcome".*

Patient and family education is a key factor for successful recovery, according to the results of the focus group discussions: *„the education should not only focus on medical procedures but also be tailored to the patient's needs and capabilities".*

Participants in the discussion share the opinion that patients with acute myocardial infarction (AMI) often do not realize the importance of lifestyle changes (following a diet, quitting smoking, stress control, and regular physical activity).

The disease can leave physical consequences, such as chest pain, fatigue, and limited mobility. These symptoms can make participation in rehabilitation programs difficult and reduce the patient's self-esteem: *„we often encounter patients who feel demotivated and lose their self-esteem because they are unable to perform even simple tasks that were once part of their daily routine before the incident".*

The participants also highlighted the importance of involving family members in the educational process. The support of the patient during recovery influences their motivation. The presence and engagement of family members have a significant impact on the patient's adaptation to the changes in daily life resulting from the illness. One of the participants noted: "*when family members are well-informed and trained, they can provide more effective support to the patient during the recovery process*". When the family is actively involved in the recovery process, patients feel more supported and motivated to follow the treatment, participate in rehabilitation programs, and adapt their habits and lifestyle.

It was established that there is a need to use a variety of educational methods, including visual aids and interactive sessions, to facilitate the patient's understanding

of the provided information.

2.3.3. Interactions between patients and healthcare professionals in the treatment and care of acute myocardial infarction and comorbid conditions.

The quality of medical care, especially for patients with acute myocardial infarction, is receiving increasing attention in modern medical practice. Key aspects of communication, decision-making processes, adherence to treatment recommendations, and patient satisfaction were studied through observation in a real clinical setting. A purposive sampling method was used, with patients (n=100) from different demographic groups (age, gender, socio-economic status) included in the study.

The observation was conducted in a hospital setting using a **Checklist**, which included the following key aspects of the treatment and care for patients:

- communication between patients and medical team;
- coordination of care;
- patient support;
- physical recovery;
- clinical indicators.

The checklist was applied during daily monitoring (from day 1 to day 9) of the patient's condition and helped collect information regarding the evaluation of care and determining directions for its improvement. The data were analyzed using descriptive statistics, presenting percentages and mean values to assess the quality of care.

The observation confirms that effective communication is at the core of successful treatment and care (Fig. 24).

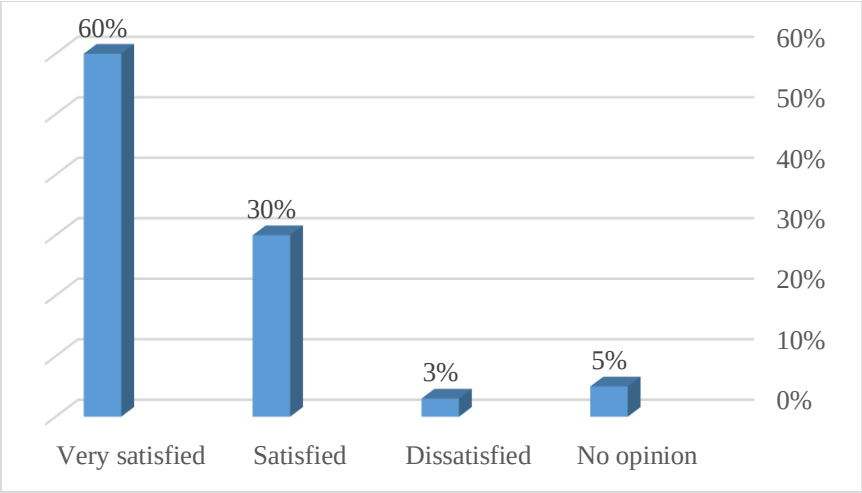

Figure 24. Patient satisfaction with communication with the medical team

Patients who receive clear and accessible explanations about their condition and behavior are more likely to have a positive experience during hospitalization. As communication improves and clearer information is provided, engagement significantly increases (Fig. 25).

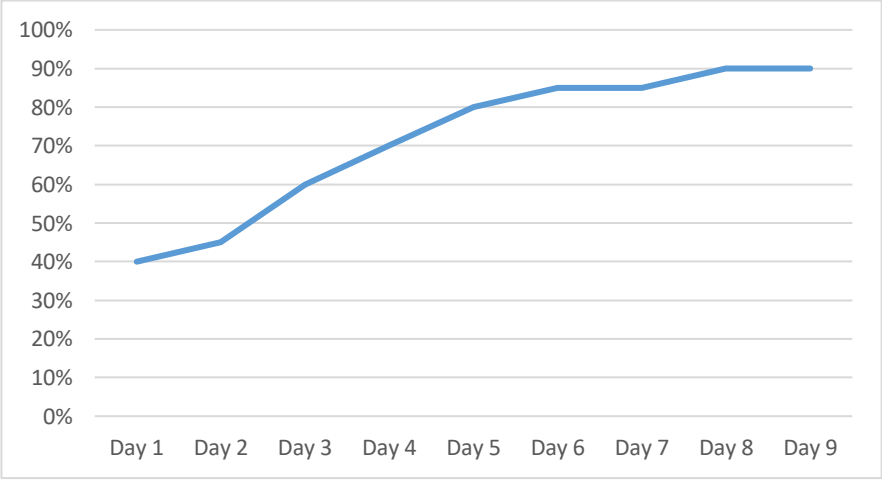

Figure 25. Engagement of patients after improvements in communication

Effective communication not only improves patients' understanding of their condition but also ensures that they actively participate in discussions about their treatment. At the beginning of hospitalization, half of the patients (50%) feel socially isolated, which may be due to a lack of social support or insufficient adaptation to the hospital environment. By the end of the hospitalization, the percentage of patients who feel isolated decreases to 30%, while those who do not feel isolated increase to 70%. The results indicate that when healthcare professionals encourage patients to ask questions and express their concerns, engagement and adherence to prescribed therapies, as well as overall well-being, improve.

The study conducted among patients with cardiovascular diseases reveals several key aspects of the quality of medical care and coordination of services. The majority of patients are satisfied with the timely and well-organized assistance, which is a positive indicator of the effectiveness of medical teams in emergency situations (76%). This suggests that the primary care to stabilize patients' conditions is provided at a high level (Fig. 26).

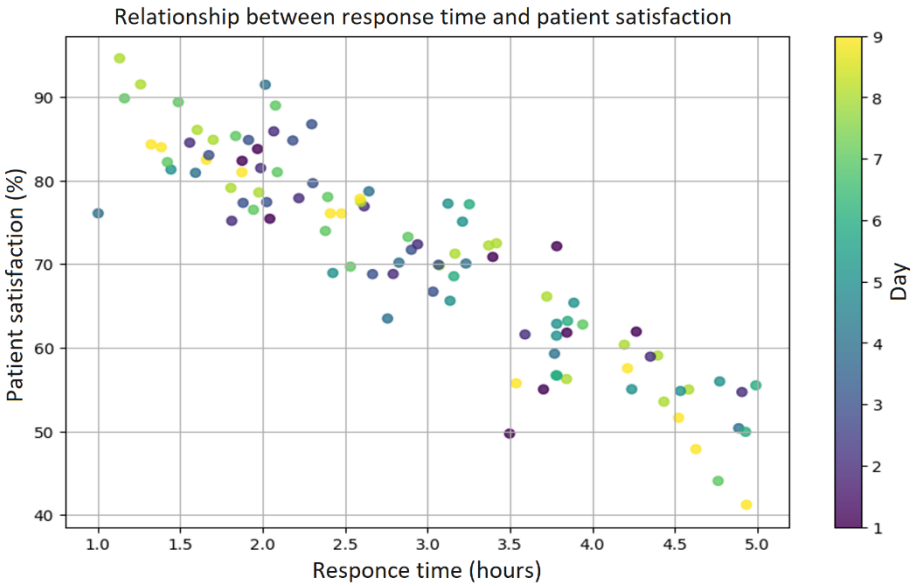

Figure 26. The relationship between response time and patient satisfaction

A clear negative correlation is observed between response time and patient

satisfaction. Patients who receive faster assistance are significantly more satisfied. The colors of the dots (day of the study) are evenly distributed, indicating that the trend remains consistent throughout the entire study period. Based on these results, we would recommend optimizing processes to reduce response times, which would improve patient satisfaction.

The lack of coordination can lead to the deterioration of patients' health, increased hospital stays, and even worse clinical outcomes. This problem may be related to unclear communication channels, inadequate information sharing, or insufficient interaction between different healthcare professionals.

The observation shows that the quality of medical care for comorbid patients with acute myocardial infarction (AMI) is high, but there are still areas for improvement. Effective communication, good coordination, patient support, access to rehabilitation programs, and adherence to clinical protocols are key factors for successful treatment and recovery. The implementation of the proposed measures will contribute to further improving the quality of care and patient outcomes.

During the first three days of hospitalization, the mean arterial pressure remains stable at 140/85 mmHg. However, on the fourth day, a slight increase is observed (145/90 mmHg), which may indicate the need for adjustment of the medication therapy. The heart rate stays within normal limits, with an average value of around 75 beats per minute. These results suggest that the treatment introduced is effective, but also highlight the need for regular monitoring and therapy adaptation.

At the beginning of the observation, over 60% of patients experience difficulties with self-care, particularly with dressing and maintaining personal hygiene. By the seventh day, this percentage decreases to 20%, indicating significant improvement in physical condition and progress in the rehabilitation process.

Regarding social integration, 50% of patients report a sense of social isolation at the start of the observation. After conducting active communication sessions and group activities, this percentage decreases to 30% by the ninth day, showing a positive effect of social support on the psycho-social well-being of the patients (Fig. 27).

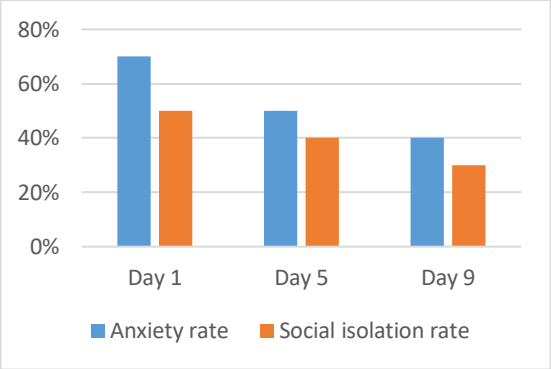

Figure 27. Social integration and anxiety

The changes in social integration emphasize the importance of social support during the recovery process. When patients have the opportunity to connect both with each other and with the medical staff, they experience a higher sense of belonging and a reduction in feelings of isolation. This is particularly significant for patients with comorbidities, where social dynamics play a crucial role in their overall well-being. The level of anxiety in patients also significantly decreases after the provision of emotional support ($p < 0.05$).

The assessment of the psycho-emotional state shows that 70% of patients experience anxiety and fear of future health issues at the beginning of treatment. Through targeted interventions aimed at providing emotional support and information, the level of anxiety decreases to 40% by the end of the observation. We observe a statistically significant reduction in the percentage of patients feeling social isolation ($p < 0.05$). The intervention has a positive impact on the social integration of patients.

We observe a positive correlation between the reduction in social isolation and the reduction in anxiety, indicating that social support has a positive effect on the psycho-emotional state of the patients ($r = 0.65$, $p = 0.004$).

The observation of interactions between medical professionals and patients with acute myocardial infarction provides valuable insights into the functioning of the healthcare system. The revealed experience highlights the need to improve communication, encourage active patient involvement in the decision-making process, and ensure synchronized care.

These results support the effectiveness of interventions aimed at improving the quality of medical services and patient satisfaction, especially in complex cases with comorbidities.

2.3.4. Psychological aspects of recovery after acute myocardial infarction

Patients recovering from acute myocardial infarction (AMI) often experience high levels of anxiety, depression, and stress. These psychological conditions can hinder the recovery process, reduce motivation to follow medical recommendations, and increase the risk of recurrent cardiac events. The study on the psychological aspects of post-AMI recovery was conducted among patients (n=100) from various demographic groups (age, gender, socioeconomic status) admitted for treatment at The First Cardiology Clinic with an Intensive Care Unit at UMHAT "St. Marina" EAD, Varna. The sample consisted of 57.0% men (n=57) and 43.0% women (n=43) (Fig. 28).

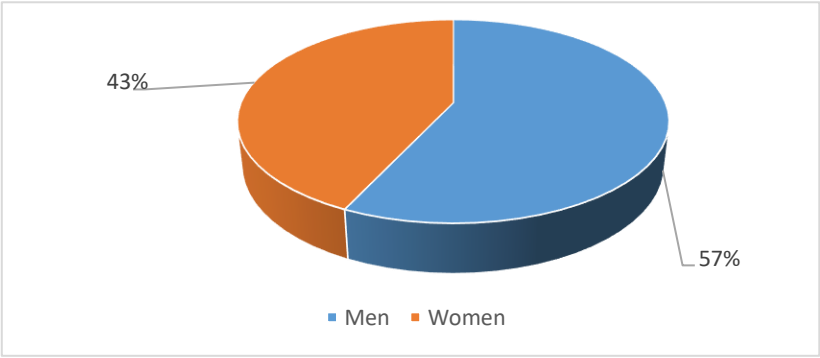

Figure 28. Distribution of patients by gender

The selection of patients included in the study was based on practical, statistical, and ethical considerations. This approach allows for a high-quality and manageable study that is representative of the population (n = 200) and can provide valid and reliable results.

The study results indicate significant psychological difficulties among patients with acute myocardial infarction (Fig. 29).

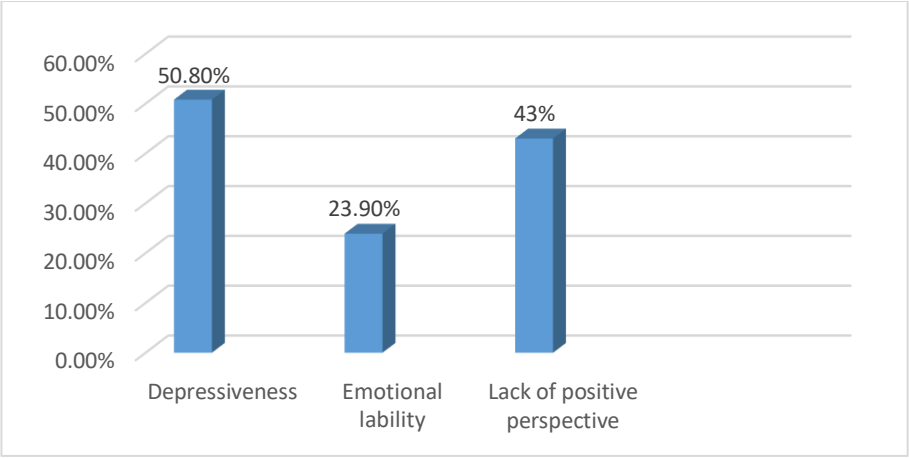

Figure 29. Psychological aspects in patients with acute myocardial infarction

Depression is common among AMI patients and can worsen prognosis by increasing the risk of recurrent events. Almost half of the patients experienced depressive symptoms ("feeling down, gloomy, and sad"—31.6% sometimes, 19.2% often or always). Emotional lability and anxiety were high, potentially worsening prognosis. Nearly a quarter of respondents reported frequent crying episodes (23.9%). A lack of positive outlook was reported by approximately half of respondents, indicating a lack of positive perspective (43%).

Comparison of mean values shows that psychological symptoms were more pronounced in older patients (Fig. 30). An integrated approach encompassing medical care, psychological support, and social rehabilitation is needed to improve prognosis and quality of life for AMI patients. Successful recovery requires a holistic approach to care and support in managing anxiety and depression.

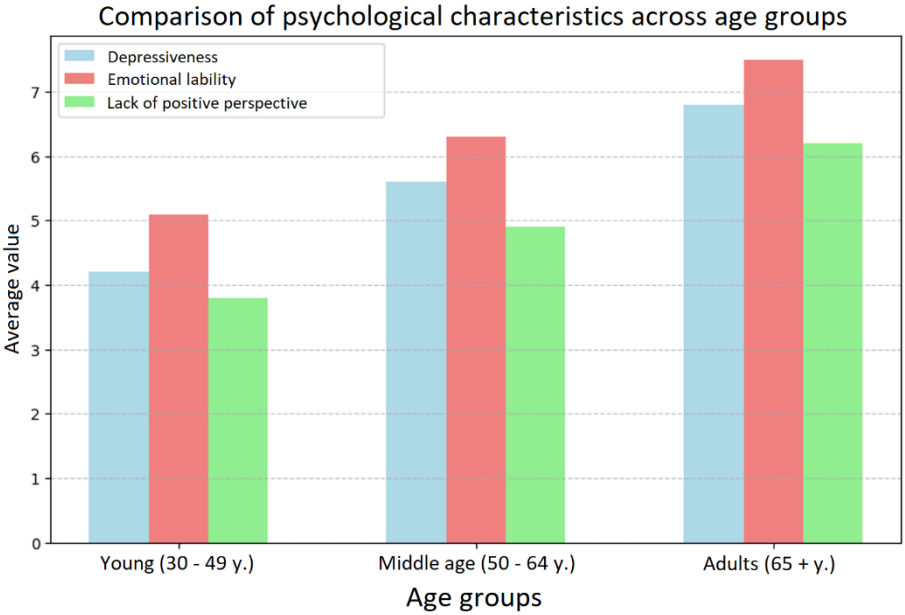

Figure 30. Comparison of psychological characteristics by age groups

Physical symptoms provide important information about patients' overall health and the effects of the disease on their daily activities. They often reflect both the physiological changes associated with AMI and the resulting stress (Fig. 31). With increasing age, symptoms such as sleep problems, tachycardia, and fatigue become more frequent and intense, manifesting most seriously in patients over 60 years of age. Early diagnosis and active management of these symptoms, particularly in older patients, are confirmed as necessary.

Psychological symptoms, frequently observed in patients with cardiovascular disease, significantly impact overall health. These symptoms not only hinder daily activities but can also have long-term consequences on the patient's ability to adapt to new life circumstances. Restlessness, reported by almost half of the patients, indicates that anxiety is a common symptom (50.0%). Despite the small percentage of patients experiencing sad and anxious thought processes, this symptom should be considered a signal of a potentially dangerous condition (5.5%).

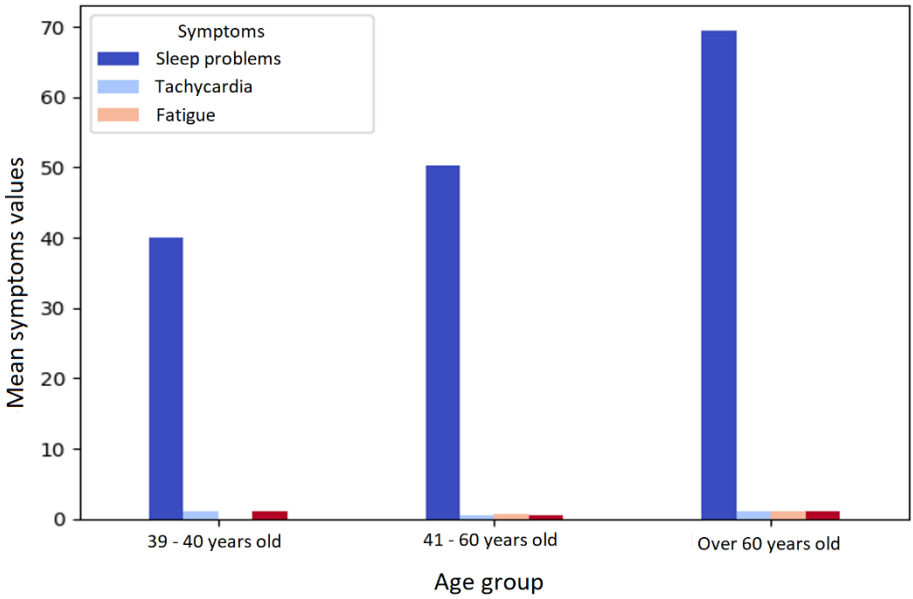

Figure 31. Mean symptom values by age group

2.4. Factors for improving healthcare and condition management – the experience of patients with acute myocardial infarction

Acute myocardial infarction (AMI) is one of the most serious cardiovascular diseases, affecting not only patients' physical health but also significantly impacting their mental well-being and social adaptation. While modern medicine offers effective treatment and rehabilitation methods, the recovery process is often associated with numerous challenges that remain insufficiently investigated. This prompted us to seek patients' perspectives on their experiences, attitudes, and perceptions during treatment and care through in-depth interviews. To maintain the anonymity of the interviewees, respondents are identified by numbers from R1 to R30. The questions focused on the following aspects:

- Experiences and perceptions regarding health status;
- Quality of care and relationships with healthcare professionals;
- The role of nursing care in treatment;
- Experience with the multidisciplinary approach and care coordination;
- Personal attitudes and behaviors regarding a healthy lifestyle;

- Stress and psychosocial factors;
- Access and provision of healthcare.

In-depth interviews with patients who experienced acute myocardial infarction revealed key aspects of their initial experiences, emotional responses, and perceptions of treatment and care. Participants described intense feelings of panic, confusion, and fear of death arising immediately after symptom onset.

„*I remember feeling chest pain, and then everything seemed to slow down. I didn't know what was happening. I thought it might be nothing serious, but when I got to the hospital, I realized how serious it was...*" (R1).

„*I can't forget that moment. Perhaps the first thing that went through my mind was the fear that I wouldn't survive. Treatment began immediately, but I was so anxious that I hardly remember what happened...*" (R2).

A significant number of respondents (n=18) did not realize the seriousness of their condition until hospitalization. While reported chest pain, often described as severe and unbearable, caused physical discomfort, only a small percentage of patients immediately recognized it as a potential symptom of an infarction. For example, respondent R1 (female, 29 years old) expressed skepticism about the seriousness of her condition, assuming the pain was minor. Another respondent shared that their initial fear was of not surviving, indicating a clear emotional response to the unclear situation (R2).

„*Initially, I didn't understand what was happening. I was admitted to the hospital after a day, when the pain became unbearable. I was very anxious and confused...*" (R3).

„*I don't remember much from the moment it happened. I was so panicked that I couldn't even understand what was happening. The doctors explained everything, but I wasn't able to comprehend it. Only later did I understand that they had saved my life...''* (R10).

„*I remember panicking. I thought it might just be stress, but when I got to the hospital, I realized it wasn't. It was a shock….*" (R11).

Participants' responses reveal the high levels of panic and confusion commonly experienced by AMI patients. These reactions manifest as psychological blocking, hindering patients' ability to fully understand their condition and respond

appropriately. Experiences of anxiety and confusion amidst increasing pain, leading to hospital admission only the following day, were reported (R3). One respondent described panic and an inability to understand what was happening, despite receiving medical intervention (R10).

„*My whole body tensed up. I remember being admitted to the hospital and the doctors immediately starting to work on me. I couldn't believe what was happening....*" (R12).

„*The pain was indescribable. I thought I was going to die. When I got to the hospital, I started to understand the seriousness of the situation...*" (R13).

„*I couldn't believe it was happening to me. In the hospital, they explained that I'd had a heart attack, but I don't remember much of the whole situation...*" (R14).

Following hospital admission, all patients recognized the seriousness of their condition, although the intensity of this realization varied. While some reported understanding the situation only after being informed by healthcare professionals (R11 and R12), others noted a quicker understanding despite ongoing panic. One patient described the pain as indescribable, stating that they realized the seriousness of the situation immediately upon hospital admission (P12).

„*I'll never forget that moment. I was so scared that I didn't understand what was happening to me. Treatment started immediately, but the fear lingered for a long time...*" (R15).

The data indicate that a lack of early psychological support complicates the process of psychological adaptation to the diagnosis, potentially increasing the risk of developing secondary mental health disorders. Significant emotional and psychological reactions following the infarction, including fear of death and difficulty comprehending the situation, were reported by almost half of the patients (43%). They often felt helpless and confused, not fully understanding what was happening to them. Respondent R15 (female, 29 years old) expressed that fear and uncertainty regarding her condition persisted long after treatment began.

The predominant view among respondents in the in-depth interviews was that, for many, the initial reaction to acute myocardial infarction was characterized by intense fear, panic, and confusion. They did not immediately recognize the symptoms of a heart attack, which could delay seeking medical help and worsen their condition. This panic and lack of adequate understanding of the situation led to additional stress,

potentially negatively impacting the recovery process. However, recognizing the seriousness of the illness and commencing treatment in the hospital gradually shifted patients' attitudes, leading them to perceive their condition as critical.

A correlation was found between patient age and the perception of the seriousness of their condition. Younger patients may exhibit less awareness of risk and a lower propensity to seek medical attention ($r = 0.62$, $p < 0.05$).

A strong positive correlation was found between the patient's stress level and the time taken to seek medical attention. Patients experiencing higher levels of stress and anxiety tended to delay seeking help, posing a risk to their health ($r = 0.80$, $p < 0.01$).

This study of the recovery process following acute myocardial infarction provides valuable insights into patients' perceptions of their treatment and recovery. Specific aspects investigated include the availability and quality of information provided during recovery, support from the medical team, and patients' personal feelings regarding their physical and emotional state following hospital discharge.

„*Recovery was slow and difficult. The doctors recommended I begin light exercise, but I didn't receive sufficient instructions on how to do so safely.....*" (R4).

„*The period after discharge was a nightmare. There were no clear instructions on how to take care of myself. I really missed information about proper nutrition and physical activity.....*" (R5).

Pacients report that after being discharged from the hospital, they did not receive enough specific guidance regarding safe recovery. The cases of patients R4, R5, R16, and R20 show that the lack of information about physical activity and nutrition after discharge is a common issue. Although they were advised to start with light exercises, many patients feel uncertain about their safety and effectiveness. This fact highlights the importance of better informing and educating patients about cardiovascular health after a heart attack.

„*After the hospital, everything felt like a new beginning. There was support from the doctors and nurses on how to restore my heart function, but there was also a feeling of uncertainty that prevented me from relaxing...*" (R6).

„*Recovery was difficult, but over time I began to feel better. However, I lacked information on how to recover safely……*" (R16).

Numerous respondents expressed feelings of insecurity and confusion after discharge, highlighting a lack of detailed self-care instructions (R5, R6, R19). This uncertainty was accompanied by a sense of emotional isolation, particularly when patients lacked sufficient support from loved ones (R18). This phenomenon emphasizes the need for comprehensive emotional support and psychosocial interventions as part of the recovery process.

„*The post-hospital period was confusing. The doctors told me to be careful, but I felt I needed a bit more information…*" (R17).

„*There wasn't enough support from family and friends after discharge. My recovery was slow, and self-doubt persisted…*" (R18).

„*After the hospital, there were times when I didn't know what to do. Support from my loved ones was important, and I received sufficient information from the medical team; however, I still found myself contemplating my future.....*" (R19).

„*Recovery was slower than I expected. The doctors said I should start with light exercise, but they weren't clear on what that actually entailed.....*" (R20).

„*I didn't know how to recover properly. I lacked specific guidance on how to return to my normal life. The follow-up appointments and the medical staff's guidance were very helpful.....*" (R21).

Many patients expressed gratitude for the support and information provided by the medical team, yet felt that clearer and more specific instructions were lacking (R6, R21). Physicians and nurses play a crucial role in recovery, but there are indications that communication and patient education regarding long-term post-infarction care could be improved. Recovery is not solely physical but also emotional; enhanced support from loved ones and medical personnel would significantly improve the healing process. Difficulties in recovery are often accompanied by emotional states such as fear, stress, and anxiety (R5, R17, R19). Patients reported feeling emotionally unstable after hospital discharge, highlighting the need for psychosocial support and preparation for long-term care and recovery. Psychological adaptation post-infarction is critical for complete recovery and preventing recurrence.

The results highlight the importance of a holistic approach to treatment and recovery. Patients reported that recovery after hospital discharge was associated with

several challenges, including insufficient information regarding the safety of physical activity and nutrition, as well as uncertainty regarding emotional support after discharge. This underscores the need for more thorough preparation and counseling of patients for the post-hospital phase.

Results from the analysis of variance show that patient age and the availability of recovery information are significant factors influencing the subjective assessment of recovery after acute myocardial infarction ($p < 0.05$). Patients who received more detailed information and completed rehabilitation courses reported better recovery. These results emphasize the importance of adequate information and support for patients during the post-infarction recovery process.

Of particular interest to us was the patients' expressed opinions regarding their social adaptation.

„*I couldn't interact normally with friends and family at first. I was afraid I might have another attack at any moment. My closest loved ones didn't know how to cope with me, which made me withdraw.....*" (R7).

„*I was isolated at first. No one understood what I was going through. I was very sensitive to others' opinions about my condition and felt I had to be strong so as not to disappoint my family.....*" (R8).

Respondents reported feelings of social isolation and fear of recurrent cardiac events in the early stages of recovery. Patients such as P7 (female, 40) and P8 (male, 33) mentioned withdrawing due to a fear that their loved ones couldn't fully understand their condition. This sense of isolation stemmed not only from the physical limitations imposed by their health status but also from emotional stress and uncertainty about the future.

„*My friends didn't know how to help. However, thanks to conversations with my loved ones and the medical staff, I started to feel better. They were my support system.....*" (R9).

„*My initial recovery was difficult because I feared a recurrence. However, my family's support was key—they encouraged me to return to my normal life, and that helped immensely.....*" (R22).

„*There were times when I felt isolated, but my loved ones consistently kept in touch. Talking with them made me feel better and gave me confidence that I wasn't alone.....*" (R23).

„*My social life was limited for a while, but my friends were there for me. They often visited me at home, knowing I couldn't go out frequently, and that made me feel connected to them.....*" (R24).

Family and close friends' support significantly influenced the recovery process. Many participants noted that their loved ones were the primary source of emotional support during periods of worsening condition. For example, P9 (female, 30) and P22 (male, 37) highlighted how conversations with loved ones and encouragement to return to normal life helped them overcome difficulties and recover more quickly. Social support was also cited as a key factor in overcoming isolation and returning to normal social life (R23, R24).

„*My friends were there for me the whole time, trying to help even when they weren't sure how. Over time, I started to return to my normal life thanks to their efforts.....*" (R25)

Friends also represent a significant factor in the recovery process. Most respondents emphasized that visits and social contact with friends helped them feel less isolated. Patients shared that, while their friends didn't always know how to help, their efforts enabled them to return to an active social life (R24 and R25). Friends and family provided not only emotional but also practical support, which was important for the overall recovery process.

Despite initial social isolation during recovery, patients began seeking help and support in various ways. For example, R26 reported finding the strength to connect with loved ones and overcome feelings of isolation over time. Support from family and friends proved essential in combating the psychosocial challenges associated with post-infarction recovery.

„*Initially, I was cautious about social interaction, but gradually I found the strength to seek support from loved ones. They helped me overcome the feeling of isolation.....*" (R26).

„*Despite the difficulties, talking with friends and family gave me strength. I began to go out more often and participate in activities that made me feel good.....*" (R27).

Recovery is not only physical but also psychosocial. One patient described how, after difficult moments, she began going out more often and engaging in activities that made her feel good (R27). This included social activities that created a sense of connection with the outside world and helped reduce stress and anxiety.

Recovery is not limited to medical aspects but encompasses emotional and social elements as well. Patients who have experienced a heart attack often experience fear and uncertainty about their future, which can lead to emotional withdrawal and reduced social participation. Support from loved ones, friends, and the medical team is crucial for restoring the patient's stability. On average, patients experienced moderate social isolation, but there was a large standard deviation, indicating that the feeling of isolation varied considerably among individuals (SD: 1.5). Most patients considered support from loved ones extremely important, although for some it was insufficient or did not meet their expectations (SD: 0.7). A statistically significant relationship was found between the level of family support and the degree of social isolation ($\chi^2 = 14{,}85$, $p < 0{,}05$). Patients who receive higher family support have lower levels of social isolation ($t = 2{,}35$, $p < 0{,}05$).

III. Comorbid patients with AMI – challenges and opportunities in nursing practice

3.1. Optimizing the management of cardiac care for comorbid patients with acute myocardial infarction

Analysis of the literature and empirical results from this study show that managing cardiology care in comorbid patients with acute myocardial infarction is a dynamic process facing numerous challenges, including organizational, logistical, personalized care, professional training, innovation, and approaches to improving the quality of activities. A key aspect is the coordination of care between different departments and specialists, encompassing coordination between emergency and intensive care units, as well as post-operative rehabilitation units.

To ensure high levels of efficiency, care, and safety, it is necessary to focus on key aspects that unite clinical practice, innovation, and a personalized approach to the patient. Based on the conducted studies, we identified five key aspects central to the effective management of cardiology care:

- ***Ensuring integrated and coordinated care***

In AMI patients with comorbidities, successful treatment depends on the synchronized activity of specialists from various fields.

- *Activity coordination* — cardiology care should be organized to allow patients to transition smoothly through the various stages of treatment—from the acute phase to the recovery period. This includes pre-operative consultations, emergency intervention, rehabilitation, and ongoing monitoring.
- *Avoiding duplication and omissions* — effective coordination reduces the risk of unnecessary procedures and missed steps in diagnosis and treatment, while saving resources and time.
- *Patient communication* — providing adequate information and treatment planning improves collaboration between the patient and the medical team.

- ***A personalized approach to the patient***

High-quality care requires an individualized approach tailored to the specific needs of each patient.

- *Assessment of individual needs* — in AMI with comorbidities, it is critical to determine which aspects of the patient's health require the most urgent attention.
- *Personalized treatment plans* — comorbidities often necessitate adapting standard protocols. For example, treating patients with diabetes requires more frequent monitoring of blood glucose levels and medication adjustments.
- *Psychosocial support* — care for AMI patients includes addressing psychological aspects that influence recovery, such as anxiety, fear, and depression.

- ***Ensuring safety***

Ensuring patient safety is a cornerstone of modern medicine.

- *Managing complications* — patients with comorbidities are at higher risk of complications such as arrhythmias, kidney failure, or infections. Timely monitoring of vital signs and laboratory tests is essential.
- *Training of medical personnel* — continuous updates on new therapies and safety protocols are crucial.
- *Verification of procedures and medications* — implementing double-checking procedures for prescriptions and processes reduces the likelihood of medical errors.

- ***Continuing education for medical specialists***

The field of cardiology is rapidly evolving, necessitating continuous professional development for healthcare teams.

- *Development of specialized programs* — the need for specific skills related to comorbid patients requires training in areas such as managing multisystem diseases, utilizing innovative technologies, and interpreting complex clinical data.
- *Simulation training* — the use of simulation technologies can improve teams' practical skills in emergency situations such as cardiac arrest or unstable hemodynamics.
- *Multidisciplinary training* — teamwork between cardiologists, endocrinologists, dieticians, and nurses requires a shared strategy and understanding of the roles of the different participants in treatment.

- ***Implementation of innovations and digital technologies***

New technologies play an important role in enhancing cardiac care.

- *Digitalization of medical data* – electronic health records and telemedicine systems facilitate patient monitoring and provide opportunities for remote management of treatment.
- *New diagnostic methods* – the introduction of innovative technologies, such as artificial intelligence for image analysis or genetic testing, supports more precise diagnosis and prognosis.
- *Self-monitoring technologies* – devices like smartwatches and implantable cardioverter-defibrillators enable patients to actively participate in managing their health.

The identified five key aspects—coordinated care, personalized approach, safety, education, and innovation—are fundamental to achieving high standards in the treatment of patients with acute myocardial infarction (AMI) and accompanying conditions.

All identified aspects of cardiac care for comorbid patients with AMI prompted the need to develop integrated frameworks and tools for managing and tracking the care process. These frameworks provide structure and clarity, aiding coordination between the medical team and the patient.

As part of the proposed improvements in cardiac care management, we developed the following ***main standardized frameworks***:

- ***Assessment and Care Planning Framework –*** includes the initial assessment of the patient's condition, assessment of comorbidities, and development of an individualized care plan. The framework contains: standard questions for initial assessment, information on previous hospitalizations and consultations, risk factors, and a list of recommended interventions.
- ***Treatment and Monitoring Log for Comorbid Patients with AMI –*** allows the medical team to record every step of the therapeutic process and document patient progress. This document includes: recording of vital signs, checklist for implemented interventions, and comments on the patient's responses to care.
- ***Standards for Social and Psychological Adaptation –*** assist in addressing the psychosocial challenges after experiencing an AMI.

The tool offers: motivation techniques, questionnaires for assessing psychological status, and recommendations for group sessions or individual therapy.

- ***Recommendations for patients and their families regarding recovery in the home environment*** **–** focused on the correct implementation of therapeutic guidelines, lifestyle changes, and prevention of recurrent incidents. This document includes: information on healthy eating, recommendations for physical activity, guidelines for medication management, and contact information for consultations when needed

The significance of these standardized frameworks lies in the fact that they create clear and applicable guidelines that facilitate both the patient and the medical team. They ensure better monitoring of patients and provide a personalized approach to treatment.

The frameworks not only support effective coordination of processes but also contribute to increasing patient trust in the care provided. The implementation of these tools can be based on already existing best practices in cardiology, while also allowing for adaptation to the specific needs of comorbid patients.

Framework for condition assessment and care planning

Parameter	Description	Note/Comments
Patient Personal Data	Name, age, gender, medical history	
Diagnosis/AMI Type	Description of the type and severity of acute myocardial infarction	
Comorbid Conditions	List of all comorbidities (e.g., diabetes, hypertension, chronic respiratory diseases, etc.)	
Vital Signs	Measurements of heart rate, blood pressure, temperature, saturation, breathing	
Investigations/Results	Results from laboratory tests (blood tests, ECG, echocardiography, etc.)	
Treatment	Choice of medications, including anticoagulants, antihypertensive agents, and others	
Prognosis and Care Planning	Assessment of the risk of complications and development of a personalized treatment and monitoring plan	

Table 9. Condition assessment and care planning

Treatment and monitoring diary for patients with AMI and comorbidities.

Date	Medication Treatment	Interventions	Vital Signs	Notes/Progress

Table 10. Treatment and monitoring diary

Standards for social and psychological adaptation for patients with AMI

Activity	Description	Purpose	Responsible
Psychological Support	Individual meetings with a psychologist, consultations for stress and anxiety	Reducing stress and anxiety after the incident	Psychologist
Group Therapy	Participation in support groups with patients who have experienced AMI	Creating a supportive environment and socialization	Nurse/Psychologist
Educational Sessions	Awareness of the risks associated with AMI and preventive measures	Improving understanding of the condition and healthy lifestyle	Physician, Nurse

Table 11. Social and psychological adaptation

Recommendations for patients regarding home recovery

Category	Recommendations
Medication Treatment	Adherence to prescribed therapy, including anticoagulants and antihypertensive agents
Physical Activity	Lifestyle recommendations, including appropriate physical activity and rehabilitation after AMI
Diet	Balanced diet, with an emphasis on reducing sodium and fats
Psychological Recovery	Support for coping with stress and anxiety after AMI, referral for psychological assistance if necessary

Table 12. Home recovery – recommendations

The inclusion of such documents as appendices will demonstrate how the proposed frameworks can be implemented and how they will aid in the effective management of cardiac care for patients with acute myocardial infarction (AMI) and comorbidities.

Analyzing the team interaction in providing care for patients with AMI, we find that the nurse plays a key role in several areas:

- ensuring patient safety through continuous monitoring and appropriate responses to changes in condition;
- individual assessment of needs, which includes adapting care to specific comorbidities;
- providing high-quality and personalized care tailored to the medical and social needs of the patient;
- creating comfort and trust in the patient through effective communication and emotional support;
- synchronizing activities among team members, including cardiologists, endocrinologists, nephrologists, and rehabilitation specialists.

In this context, it is important to introduce tools for improving coordination and task tracking that ensure the effectiveness and quality of care.

All of this prompts us to develop a **care management Checklist for comorbid patients with AMI**. Such checklists are a valuable tool in medical practice, as they provide structure and consistency in executing tasks and responsibilities, allowing nurses to organize and document their activities. They consist of predefined steps that can be performed either sequentially or partially from memory, with subsequent confirmation of completion.

The significance of the developed care management Checklist is to provide a means for tracking the work of the team throughout all stages of care – from patient admission to discharge. It has been developed in accordance with best practices and recommendations for managing cardiac care. The checklist places the patient at the center of the process, with an emphasis on personalized care. The document requires personal accountability – each step is documented by the name and signature of the nurse responsible for it. This contributes to the prevention of gaps in patient care. We believe that systematic execution and documentation of interventions will enhance patient satisfaction and the effectiveness of cardiac care.

Instructions for completing the Checklist

The checklist is to be filled out by the nurse involved in the treatment and care of the patient. After each task is completed, the date is recorded, and a "+" sign is placed in the corresponding field for completed tasks or a "-" sign for tasks not completed. In the last column, the name, surname, and signature of the nurse responsible for the task are to be written. Compliance with the checklist is monitored by the senior nurse of the intensive cardiac care unit during the patient's stay, with a final verification conducted prior to discharge.

The literature review and analysis of contemporary practices highlight the need for clear identification of the roles, functions, and activities of the nurse in managing cardiac care for patients with acute myocardial infarction (AMI) and comorbid conditions.

The studied international experience in the field of cardiac nursing defines the nurse as a key participant who performs several specific roles – observational, coordinating, educational, and organizational. These roles are essential for ensuring high-quality and safe care.

The implementation of a care management Checklist in nursing practice represents an important step towards enhancing the effectiveness and quality of interactions between the medical team and the patient. This tool provides a means for structured and targeted tracking of the patient through all stages of care while simultaneously ensuring greater transparency and accountability.

Nursing activities and care significantly influence the condition and comfort of the patient, the risk of complications, and the speed of recovery following AMI. They encompass both technical tasks related to therapy and monitoring, as well as emotional support and education that contribute to the successful adaptation of the patient to the therapeutic process.

3.2. Nursing interventions guide – application in comorbid patients

Patients with acute myocardial infarction (AMI) and comorbid conditions represent a significant challenge for medical practice. Their complex needs require coordinated efforts from the medical team, including nurses. The creation of a nursing

interventions guide aims to standardize care processes and ensure better outcomes for patients.

The developed guide presents the key guidelines for managing nursing care for patients with AMI and comorbid conditions, and in our view, it would serve as a tool for enhancing the effectiveness of nursing care in cardiac practice.

3.3. Monitoring – a key element in nursing care

Effective monitoring and timely response in acute conditions such as hypertensive crises and acute heart failure are fundamental to the management of cardiac care. The complexity of the clinical picture in patients with acute myocardial infarction (AMI) and comorbid conditions necessitates the introduction of standardized guidelines to assist the medical team in providing timely and adequate assistance.

We have developed a document aimed at structuring the processes of monitoring and response, providing guidelines for the proper management of these critical situations. The included algorithms and recommendations are aligned with the best clinical practices and standards of nursing care. The application of antihypertensive medications (orally or intravenously) as prescribed.

The establishment of guidelines for monitoring and response in acute conditions, such as hypertensive crises and acute heart failure, aims to provide a clear structure and consistency in the delivery of medical care. The inclusion of algorithms and practical guidelines not only ensures timely intervention but also enhances the efficiency of the medical team in critical situations.

It is particularly important to emphasize the role of the multidisciplinary approach, which integrates the efforts of physicians, nurses, and other healthcare professionals into a unified process. This coordination is essential for ensuring safe and high-quality care for patients. The developed guidelines serve as a foundation for:

- Standardization of monitoring and response processes for acute conditions.
- Improvement of communication within the team and decision-making.
- Provision of training and professional development for medical specialists.

These documents not only enhance the effectiveness of care but also contribute to the long-term improvement of clinical outcomes and patient satisfaction. Their implementation in practice is a step towards standardizing quality care and creating a sustainable healthcare system.

3.4. Continuing education and competencies enhancement for nursing practice in comorbid patients with acute myocardial infarction

The professional training of nurses must meet the increasing demands of contemporary cardiology practice. Care for comorbid patients with acute myocardial infarction (AMI) requires attention to the complex condition of the patient, which often includes multiple comorbidities and an elevated risk of complications. Significant factors that determine the specificity of activities and care are the continuous development of cardiological technologies, personalized medicine, and new standards for managing comorbid conditions.

The advancement of invasive and non-invasive approaches in cardiology is changing the environment in which nurses perform their duties. The incorporation of advanced technologies such as telemedicine, automated monitoring systems, and integrated data management platforms requires not only technical knowledge but also the ability to adapt their behavior and skills to new realities.

Building a professional multidisciplinary team in cardiology, in which the nurse plays a key role, requires both investment and motivation. Nurses are actively involved in all stages of care – from initial assessment and planning to ongoing monitoring and rehabilitation. The progress in cardiological science and the demands for teamwork necessitate continuous education and development of nurses' professional competencies.

The analysis of the need for continuing education for nurses providing care for patients with AMI shows a pronounced need for updating knowledge and acquiring practical skills that align with the dynamics of modern cardiology practice. This drives us to develop and propose content for theoretical and practical **courses for individual training**, as well as **specialized training programs**. We are convinced that fostering creativity and seeking opportunities for self-improvement will contribute to enhancing the competence of nurses and integrating them into the multidisciplinary team.

Within these programs, we propose two individual training courses for nurses:

- **Specialized training for nursing care of comorbid patients with AMI** – provides opportunities for enhancing the theoretical and practical skills of nurses working with comorbid patients in the acute phase of AMI, including risk assessment, monitoring, and therapeutic interventions.

- **Rehabilitation and nursing care for patients after acute myocardial infarction in a hospital environment** – specifically designed for nurses working with comorbid patients following AMI in a hospital environment. The focus is on rehabilitation and the management of complex clinical conditions that require coordinated efforts from a multidisciplinary team, including a cardiologist, nurse, and rehabilitation specialist. The training provides knowledge and practical skills aimed at recovery, preventing complications, and long-term management of comorbid conditions.

The proposed two training programs demonstrate a natural interconnection and sequence in the development of nurses' professional skills. It is recommended that the training begin with the specialized course focused on nursing care for comorbid patients in the acute phase of acute myocardial infarction (AMI), where the emphasis is on risk assessment, monitoring, and therapeutic interventions. Once these skills are mastered, the nurse can enhance their competencies by participating in the rehabilitation program for patients with AMI in a hospital setting, focusing on recovery, coordination within the multidisciplinary team, and long-term management of comorbid conditions.

The programs are structured to last 5 days and include 40 hours of training (15 hours of theoretical modules and 25 hours of practical modules). The practical modules are conducted in both simulated environments and real clinical settings.

The aim of these training programs is to increase the professional competence of nurses by providing knowledge and skills for:

- assessment and management of the condition of patients with acute myocardial infarction (AMI) and comorbidities;
- effective use of integrated technologies for monitoring and therapy;

- creating a safe and comfortable environment for the patient;
- providing personalized nursing care during the stages of rehabilitation and social adaptation.

To achieve high training effectiveness, it is recommended that the courses be conducted in small groups of 5 to 8 participants. This allows for an individualized approach, full participation in practical exercises, and the exchange of experiences among participants.

TRAINING PROGRAM
FOR NURSING CARE OF COMORBID PATIENTS WITH AMI

Duration: 5 days
Training supervisor: …….....……
Training base: Medical Univesity – Varna, UMHAT „St. Marina" – Varna
Structure within the base: Department of Health care at the Faculty of Public health and Intensive Cardiology Care Unit to UMHAT „St. Marina" – Varna
Designed for: Nurses
Note: The training includes working with monitoring equipment. Minimum number of participants: 5, maximum number: 8.
Total hours: 40 hours

Theoretical module	Practical module
15 hours	*25 hours*

Distribution of the material by topics:

Theoretical module:

Thematic content	Hours:
1. Introduction to Nursing Care in AMI.	*3 hours*

2. Assessment of Comorbid Conditions and Their Impact on AMI Therapy.	*3 hours*
3. Standards and Protocols for Managing Patients with AMI.	*3 hours*
4. Monitoring Vital Signs – Equipment and Techniques.	*3 hours*
5. Organization of the Nurse's Work in a Multidisciplinary Team.	*3 hours*

Practical module:

Thematic content	**Hours:**
1. Preparation of the patient for intensive monitoring.	*3 hours*
2. Management of equipment for monitoring cardiac activity.	*5 hours*
3. Participation in multidisciplinary sessions for therapy planning.	*5 hours*
4. Early mobilization and management of physiotherapeutic activities.	*7 hours*
5. Discussions and feedback on developed nursing care plans.	*5 hours*

REHABILITATION AND NURSING CARE FOR PATIENTS AFTER ACUTE MYOCARDIAL INFARCTION IN A HOSPITAL ENVIRONMENT

Duration: 5 days
Training supervisor: …….....……
Training base: Medical Univesity – Varna, UMHAT „St. Marina" – Varna
Structure within the base: Department of Health care at the Faculty of Public health and Intensive Cardiology Care Unit to UMHAT „St. Marina" – Varna
Designed for: Nurses
Note: The training includes working with monitoring equipment. Minimum number of participants: 5, maximum number: 8.
Total hours: 40 hours

Theoretical module	Practical module
15 hours	*25 hours*

Distribution of the material by topics:

Theoretical module:

Thematic content	Hours:
1. Introduction to Rehabilitation after AMI.	*3 hours*
2. The Role of the nurse in Rehabilitation and the Multidisciplinary Team.	*3 hours*
3. Management of Physical Activity in Comorbid Patients.	*3 hours*
4. Dietary and Medication Care for Recovery.	*3 hours*
5. Prevention of Recurrences and Psychological Support.	*3 hours*

Practical module:

Thematic content	Hours:
1. Practical application of rehabilitation techniques.	*5 hours*
2. Supervised management of exercise for physical activity.	*7 hours*
3. Conducting sessions for psychological support.	*5 hours*
4. Working with the patient and family for long-term control.	*5 hours*
5. Documentation and assessment of the effectiveness of rehabilitation activities.	*3 hours*

The participation of nurses in various forms of continuing education and the dissemination of research findings invariably contribute to the enhancement of nursing practices, improvement of the quality of cardiac care, and establishment of the key role of nurses within the multidisciplinary team. The inclusion of nurses in specialized training programs reflects a conscious need to increase qualifications, enhance professional skills, and the desire for career development.

Currently, there are no established specializations for nurses in our country specifically focused on managing care for patients with acute myocardial infarction (AMI) and comorbid conditions. This specific area of healthcare requires a comprehensive approach, including diagnosis, management of acute conditions, rehabilitation, and long-term care. Moreover, the dynamics of medical technologies, personalized medicine, and integrated therapeutic approaches create a necessity for specialized training for nurses in this context.

The identified need for specialized programs in the field of cardiac care and rehabilitation of patients with AMI motivates us to develop and propose **specialization training programs**. The duration of each program is one year, and

upon completion, the trainee will obtain a qualification as "Nurse for Cardiac Care in Comorbid Patients with Acute Myocardial Infarction" or "Nurse for Rehabilitation and Care for Comorbid Patients with Acute Myocardial Infarction."

The proposed specialization programs are aligned with national requirements for obtaining specialization within the healthcare system, the basic training for the specialty "Nursing," as well as the specific differences between the two areas. They include a theoretical module in two parts with a total of 60 hours and a 520-hour practical module conducted in clinical settings. A sample syllabus has been developed that covers the main topics of the program, along with recommended literature for preparation.

3.5. Management of risk factors in patients

The results of the empirical study highlight the lack of knowledge among patients as a risk factor leading to delays in diagnosis and treatment, emotional instability, and reduced confidence in treatment. This motivates us to develop a **Patient Education Program** that will enable greater awareness and proper behavior in managing the risk factors associated with cardiovascular diseases. The program is designed to address the needs of patients by providing both theoretical knowledge and practical approaches to dealing with challenges related to stress, smoking, diet, and physical activity. The program can be recommended as an integral part of the rehabilitation and recovery process following acute myocardial infarction (AMI). The aim is to enhance patients' understanding of the significance of risk factors and create conditions for active participation in their own health care.

The training is structured within an 8-hour framework. Four sessions of 2 hours each are proposed, featuring practical advice, demonstrations, and discussions. Each session includes a brief presentation of the topic (20-30 minutes) followed by an interactive portion – discussions, questions, and practical exercises (60-75 minutes). Patients receive printed or digital materials to use at home.

The main goal of the program is to help patients build long-term healthy habits that will reduce the risk of recurrent cardiac incidents and improve their quality of life.

The program covers the following key aspects:

- Recognizing and managing psychosocial factors such as stress and anxiety.
- Support and guidance for smoking cessation.
- Fundamentals of healthy eating and weight control.
- The importance and safety of physical activity during the rehabilitation period.

The program is designed to assist and inform patients who are motivated to change their lifestyle after AMI, seeking support for quitting harmful habits, and wishing to learn practical techniques for managing stress and improving physical activity.

We believe that the program would also be beneficial for the families and relatives of patients, who play a role in supporting and adapting the patients following AMI. To achieve maximum effectiveness from the training, it is recommended that groups consist of a small number of participants—up to 5 individuals—allowing for an individualized approach and active involvement of each patient. The program can be conducted both in-person (in a hospital or outpatient setting) and online for patients who cannot attend physically. The training focuses on a multidisciplinary approach, involving the participation of a nurse, cardiologist, rehabilitation specialist, and dietitian.

TRAINING PROGRAM FOR PATIENTS
MANAGEMENT OF RISK FACTORS

Objective of the Program

The program aims to enhance the awareness and practical abilities of patients with AMI for effectively managing risk factors such as stress, smoking, diet, and physical activity. This will support long-term recovery, prevention of recurrent cardiac incidents, and improvement of quality of life.

Duration: 4 sessions of 2 hours each
Training Supervisor: …….....……
Training Base: Medical University – Varna, UMHAT "St. Marina" – Varna
Structure within the Base: Department of Health Care at the Faculty of Public Health and the Intensive Cardiac Care Unit at UMHAT "St. Marina" – Varna

Target Audience

The program is intended for patients with AMI who are in the process of recovery and rehabilitation. The primary target group includes:

- Patients who have experienced AMI, regardless of the degree of complications, seeking to improve their quality of life through risk factor management.
- Comorbid patients with accompanying conditions such as hypertension, diabetes, chronic obstructive pulmonary disease (COPD), or obesity.
- Patients referred for rehabilitation, in a hospital or outpatient setting, as part of a long-term recovery program.
- Patients discharged from hospital treatment who need support in adapting to a healthy lifestyle and managing risk factors.

PROGRAM

Session 1: Stress Management
The impact of stress on cardiovascular health.
Relaxation techniques – breathing exercises, meditation, progressive muscle relaxation.
Practical demonstration and participation in a relaxation session.
Session 2: Smoking Cessation
Risks associated with smoking after AMI.
Cessation methods – nicotine replacement therapy, support from specialists.
Development of an individual cessation plan.
Session 3: Fundamentals of Healthy Eating
The role of diet in recovery after AMI.
How to reduce salt, fat, and sugar intake.

Practical compilation of a healthy weekly menu.
Session 4: Importance of Physical Activity
Benefits of moderate physical activity after AMI.
Types of exercises suitable for patients with comorbidities.
Practical demonstration – light cardio exercises and stretching.

Training Methods

- Short presentations with visual materials.
- Discussions and question-and-answer sessions.
- Practical exercises with active participation of the patients.

Materials and Resources

- Printed guides for each risk factor.
- Video lessons demonstrating exercises.
- Monitoring tools, such as self-tracking tables for diet, physical activity, and smoking cessation.

Expected Outcomes

- Patients will recognize the main risk factors and their impact on health.
- They will apply the learned techniques for relaxation, healthy eating, and physical activity in their daily lives.
- They will develop a personalized plan for reducing risks and improving quality of life.

In the management of cardiac care, family support plays a crucial role during the recovery period and long-term stability of patients with acute myocardial infarction (AMI). The interaction between medical specialists and family members is essential for providing effective care, minimizing the risks of recurrent incidents, and creating a supportive environment for the patient.

Families often face numerous questions and challenges related to their role in the care process. A lack of information and guidance can lead to stress, uncertainty, and incorrect execution of care recommendations. Therefore, it is necessary for the medical team to provide clear and structured periodic support, allowing families to become familiar with the key aspects of caring for patients with cardiovascular diseases.

The established **organizational framework for regular sessions** is aimed at raising awareness and educating families. It includes periodic meetings where the multidisciplinary team provides practical guidance and answers questions related to the patients' recovery. These sessions not only improve coordination between the team and families but also encourage active participation of relatives in patient care, thereby contributing to enhancing the quality of life for all participants in this process.

The developed organizational framework provides clear guidelines for conducting these sessions and can be adapted according to the specific needs of the healthcare institution and the patients and their families.

ORGANIZATIONAL FRAMEWORK FOR CONDUCTING SESSIONS FOR PATIENTS WITH CARDIOVASCULAR DISEASES

(aimed at families and relatives of patients with acute myocardial infarction)

The purpose of the developed organizational framework is to establish a standard approach for conducting regular sessions aimed at the families of patients with cardiovascular diseases. The training sessions are designed to increase awareness and provide practical guidance for supporting families in the recovery process and managing the conditions of their loved ones.

The framework is applicable to cardiology clinics, rehabilitation centers, and hospital departments that work with patients who have experienced acute myocardial infarction (AMI) or other cardiovascular diseases.

The document can also be used as a guide for organizing informational sessions that include lectures, interactive discussions, and the provision of printed and/or digital materials for long-term use.

The sessions are conducted on a biweekly basis or as needed, depending on the number of patients and the families' needs. Each session lasts between 60 and 90 minutes. The content includes:

1. **First Session: Basics of Cardiovascular Diseases and AMI**
    - Causes and risk factors.
    - Key principles of care after AMI.
    - The importance of active family participation.

2. **Second Session: Management of Risk Factors**
    - Stress and its impact on the patient.
    - Healthy eating and the family's role in preparing appropriate meals.
    - Motivation for physical activity.

3. **Third Session: Support in the Recovery Process**
    - How the family can provide emotional and psychological support to the patient.
    - Recognizing early warning signs of recurrent incidents.
    - Ensuring a safe home environment.

4. **Fourth Session: Long-term Management and Social Adaptation**
    - How to ensure regular monitoring and timely treatment.
    - Participation in social activities and returning to normal life.
    - How the family can be a long-term partner in care.

Effective resources and materials should be accessible, easily understandable, and practical, including:

- Printed and digital guides containing checklists for daily care; recommendations for nutrition, physical activity, and medication regimens; contact information for medical specialists.
- Video materials – instructions for exercises, relaxation techniques, and working with patients.

These resources not only enhance the quality of care but also reduce families' anxiety and transform them into active partners in the treatment process. Training families is not just a "good practice" but a strategic investment in the healthcare system. It

transforms families from passive observers into active partners in providing cardiac care. By providing updated information and practical guidance, families can feel more confident and prepared for their role in the patient's recovery.

IV. CONCLUSIONS, PROPOSALS, CONTRIBUTIONS

4.1. Conclusions

1. A multidisciplinary approach and team coordination reduce the risk of recurrent cardiac incidents ($\chi^2 = 8.13$) and improve clinical outcomes in comorbid patients with acute myocardial infarction.
2. The lack of clear communication guidelines among medical specialists hinders the provision of quality care.
3. The introduction of a Care Checklist **optimizes the clinical process**, reducing gaps in the delivery of nursing interventions ($p < 0.01$).
4. Arterial hypertension (68%), diabetes mellitus (42%), and chronic obstructive pulmonary disease (COPD) (31%) are the most common comorbidities associated with acute myocardial infarction, requiring individualized management algorithms.
5. A low level of follow-up and lack of long-term commitment from patients during the rehabilitation period are observed.
6. Patients' health behavior is strongly influenced by their awareness and access to healthcare services ($\chi^2 = 8.13$, $p > 0.05$).
7. Nurses with more than 5 years of professional experience demonstrate higher effectiveness in the diagnostic and therapeutic process compared to colleagues with less experience (23%).
8. Nearly half of the patients with AMI exhibit depressive symptoms (43%), and more than one-third show increased anxiety (37%), highlighting the need for psychological assessment and support during the recovery period.
9. The implementation of standardized protocols for managing AMI in comorbid patients reduces documentation time and improves care coordination (35%).
10. Experienced nurses demonstrate better adaptation to the dynamic environment in cardiology.
11. Specialized training for managing comorbid patients enhances the competence of nurses in interpreting diagnostic data ($p < 0.05$).

4.2. Proposals

Proposals to the Ministry of Health regarding the regulatory framework governing the activities of nurses:

- Establish a specialization program for "Nurse for Cardiac Care in Comorbid Patients with Acute Myocardial Infarction" and "Nurse for Rehabilitation and Care for Comorbid Patients with Acute Myocardial Infarction" in accordance with Regulation No. 1 from 2015 for acquiring specialization in the healthcare system.
- Develop a standard for nursing care for patients with acute myocardial infarction (AMI) and comorbid conditions, including requirements for safety, coordination, and monitoring of patients.
- Regulate the use of integrated technologies and electronic systems for managing medical documentation in nursing practice.

Proposals to medical universities regarding enhancing the competencies of nurses in cardiac practice:

- Develop and propose for approval specialized training programs in the field of cardiac care and rehabilitation for patients with AMI.
- Promote the role of nurses by presenting innovations in nursing practice at conferences, symposiums, and specialized forums.
- Organize open lectures, seminars, and workshops to enhance the theoretical knowledge and practical skills of nurses in cardiac care.
- Introduce individualized training programs aimed at developing specific competencies for working in a multidisciplinary team.

Proposals to healthcare institutions regarding the activities and care of nurses for patients with AMI:

- Develop and implement guidelines for good nursing practice based on international standards for managing cardiac care in AMI.
- Introduce specific nursing documentation, such as checklists and algorithms for monitoring patients with AMI and comorbid conditions.
- Develop patient safety programs, including strategies for minimizing risks and managing complications in patients with comorbidities.
- Ensure opportunities for continuing education for nurses working in cardiology clinics by encouraging participation in courses and professional development programs.

- Implement feedback systems and quality assessments of nursing care based on patient outcomes.

4.3. Contributions

Based on the conclusions, recommendations, and results from our studies, we would like to highlight the following elements of contribution:

Theoretical-Cognitive Contributions:

- A historical and conceptual analysis of nursing care for patients with acute myocardial infarction (AMI) in the context of comorbidities has been conducted.
- For the first time, a study has been conducted on the specific functions of nurses in the management of cardiac care for comorbid patients with AMI.
- Contemporary trends and standards in cardiology practice have been analyzed, with an emphasis on the multidisciplinary approach and its significance for care management.
- The theoretical foundations for the implementation of checklists in managing nursing activities for comorbid patients with AMI have been developed.
- The needs and attitudes of nurses regarding continuing education and specialization in the field of cardiac care and rehabilitation have been investigated.

Practical-Application Contributions:

- A checklist for managing nursing care for comorbid patients with AMI has been proposed for the first time, which structures and optimizes care processes.
- A model for rehabilitative care for patients with AMI in a hospital setting has been developed, emphasizing coordinated work within the multidisciplinary team.
- Programs for individual training and specialization for nurses working with AMI patients have been proposed, aligning with current protocols and standards in cardiology.
- Specialized training programs for "Nurse for Cardiac Care in Comorbid Patients with AMI" and "Nurse for Rehabilitation and Care for Comorbid Patients with AMI" have been developed.

- Training modules encompassing theoretical and practical preparation for nurses have been created, with a focus on innovations and best practices in cardiology.
- Frameworks for safety and quality management of cardiac care, based on integrated technologies and electronic systems, have been proposed.
- An approach for developing individualized care and rehabilitation plans for patients with AMI and comorbid conditions, in line with the multidisciplinary approach, has been established.
- A guide for nursing interventions in patients with AMI and accompanying diseases has been created.
- Guidelines for monitoring and responding to acute conditions such as hypertensive crises or heart failure have been presented.
- A structured training program for patients regarding the management of risk factors such as stress, smoking, diet, and physical activity has been developed.
- An organizational framework with regular sessions for informing families in the care of patients with cardiovascular diseases has been established.

Publications on the dissertation topic

1. Stoyanova I. The role of the nurse in patients with pacemakers: Practices and interventions in preoperative and postoperative intensive care. World Journal of advanced Research and Reviews (WJARR); (eISSN: 2581-9615) September 2024, 23(03), 2764–2772