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Ból jako determinant dyspozycji wyjazdowych do zdarzeń dla Zespołów Ratownictwa Medycznego typu Podstawowy i Specjalistyczny na przykładzie miasta jednego z wybranych województw w Polsce

Pain as a determinant of outgoing dispatch to events for Basic and Specialist Medical Rescue Teams on the example of the city of one of the selected provinces in Poland

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Streszczenie

Ból jest odbierany przez pacjentów, jako wieloetapowy składnik odczuć i dolegliwości, które towarzyszą jednostce od zarania dziejów. Diagnostyka bólu to problematyka, która poddawana jest ciągłej analizie celem zniwelowania symptomów, które wielokrotnie stanowią podstawy kwalifikacji ich do podejmowania działań medycznych celem uśmierzenia bólu i zapewnienia pełnego komfortu psychiczno – fizykalnego. Ból wielokrotnie stanowi składową toczącego się procesu patologicznego w organizmie.

Słowa kluczowe: ratownictwo medyczne, ból, medyczne czynności ratunkowe, analgezja

Summary

Pain is perceived by patients as a multi-stage component of feelings and ailments that have accompanied the individual since the dawn of time. Diagnostics of pain is a problem that is subject to constant analysis in order to eliminate the symptoms that repeatedly constitute the basis for qualifying them to take medical actions to relieve pain and ensure full psycho-physical comfort. Pain is repeatedly a component of the ongoing pathological process in the body.

Key words: emergency medical services, pain, medical emergency operations, analgesia

Introduction

Pain is a determinant that provides much information about the physiological process of the functioning of a living organism. The discomfort experienced by patients comes from a variety of pain causes. It is often chronic or acute, sudden. The physiological element of pain sensation is the nociceptor, or the pain receptor. They are located at the ends of tissues, e.g. skin, but also in internal organs and muscles. The source of pain may be stimuli: mechanical, thermal, chemical, electrical. The organ that receives signals – pain stimuli is the brain. Pain pulsation in the Central Nervous System (CNS) in the spinal cord follows the principle of the afferent (ascending - afferent) and efferent (descending - leading) pathways. The effect is a reflex, in this case to pain. The pain threshold, or pain tolerance, is the body's ability to bear the intensity – the intensity of an unpleasant sensation. The enzymatic process of acting on tissue proteins – kininogens begins, simultaneously detaching active polypeptides – kinins from them, which depolarize naked nerve endings and trigger cascades of pain impulses in afferent nerve fibres [1].

The pain threshold is defined as the smallest intensity of a given stimulus – sound, thermal sensations or touch – at which a person begins to feel pain.

The following factors are significant in classifying the pain threshold: the patient's age, comorbidities, pain mechanism, pain intensity, and analgesics taken. Pre-hospital emergency medical services in Poland operate on the basis of the Integrated Emergency Notification System in the form of the Provincial Central Dispatching Centre at number 999 and Provincial Emergency Notification Centres at number 112 (PENC). Currently, operators of 112 numbers receive reports from patients about the incident and forward them to medical dispatchers to 999. Medical dispatching room – an organizational unit of the voivodeship office indicated in the voivodeship action plan of the system, created to receive and handle emergency reports from emergency notification centres, in art. 3 par. 2 of the act of November 22, 2013 on the emergency notification system (Journal of Laws of 2019, item 1077 and of 2020, item 568 and 695), receiving notifications about events and performing tasks by medical dispatchers. Command Support System of the State Medical Rescue – an IT system that allows the receipt of emergency reports from emergency notification centres, referred to in art. 3 par. 2 of the Act of November 22, 2013 on the emergency notification system and incident notifications, disposing of medical rescue teams, recording medical events, presenting the geographical location of the event, positioning emergency medical teams and

supporting the implementation of tasks by medical rescue teams and provincial medical rescue coordinator [2]. The medical dispatcher, conducting the dispatcher's interview, asks detailed questions to the reporting person, including the place of the incident, the reason for the report, the number of victims, ailments, illnesses, medications taken, allergies, and is currently collecting information on the COVID-19 (coronavirus) epidemiological interview. On this basis, he classifies the report as urgent or not, or provides a dispatcher's advice, or a medical advice/consultation is carried out through the doctor on duty in the dispatch room. He may also advise the patient to see their GP. At the disposal of the Basic (P) or Specialist (S) Medical Rescue Team (MRT) the dispatcher places reports for MRT in the computer system of dispatch (CSS – Command Support System), the necessary departure data on the Departure Card, including the reason for the notification. Pain is one of the frequent categories of the causes for calls. It is also placed by dispatchers in the Departure Card as a symptom of other ailments or conditions reported by the patient after the call. It is worth noting that every fifth person in Poland falls asleep and wakes up with a pain [3]. The background of this phenomenon is quite complex and becomes a frequent reason for calls by patients or their families to emergency medical services. Chronic physical suffering significantly impedes daily activity and causes patients' thoughts to focus mainly on somatic limitations. People living with chronic pain on a daily basis are often focused – "listening" to the signals coming from the body, interpreting them unambiguously negatively, which lowers the mood and strengthens the feeling of helplessness [4]. In the International Statistical Classification of Diseases and Health Problems ICD-10, pain occurs in many divisions of disease entities of individual physiological systems of the patient, as a condition classified by a detailed code. It should be noted that "The entity providing health services is obliged to undertake activities consisting in determining the intensity of pain, treating pain and monitoring the effective treatment" [5].

Purpose of the study

The aim of the study was to determine the frequency of disposing of EMS by dispatchers to reports in which pain was the determinant of the departure disposition.

Material and method

The analysis covered 70 Departure Cards of MRT P and 44 Departure Cards of MRT S. The study covered one of the selected emergency medical stations in Poland. The operating area covered the poviat of 100,000 inhabitants from the urban and rural area. The period of the analysed Departure Cards covered the months from January 2018 to September 2018. When assessing the Departure Cards (DC) MRT P and S, the following criteria were analysed: gender of the victim, place of residence or being at the time of reporting the event, age, type of pain.

All DC with the word pain in the reason for reporting field or the word pain were entered by the medical dispatcher in the description of the reason for reporting as a sudden or chronic symptom accompanying the symptoms, were analysed in accordance with the criteria of the study. Descriptive statistics are presented in the form of numerical and percentage values.

Results

In the period from January 2018 to September 2018, the study covered a total of 114 Departure Cards of MRT P and S.

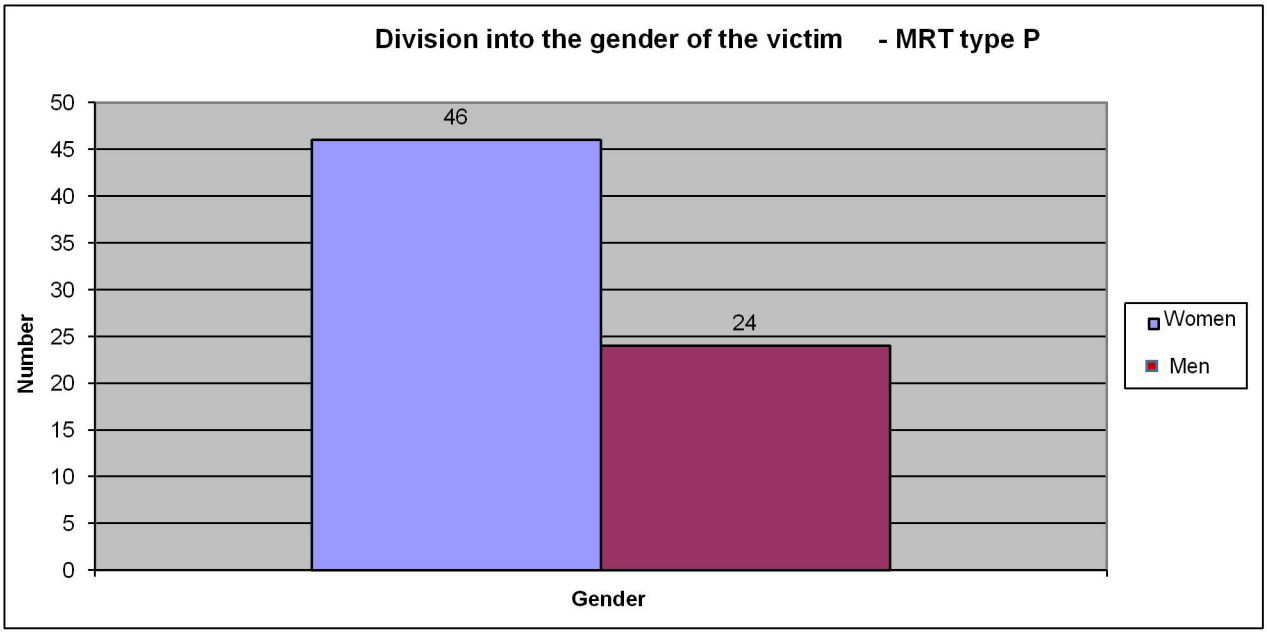

Chart. 1 Division by gender of the victim – MRT type P.

Out of 70 visits of the P type Medical Rescue Teams, 46 visits concerned women, which constituted 65.71% of all visits, and 24 visits concerned men, which constituted 34.29% of all visits.

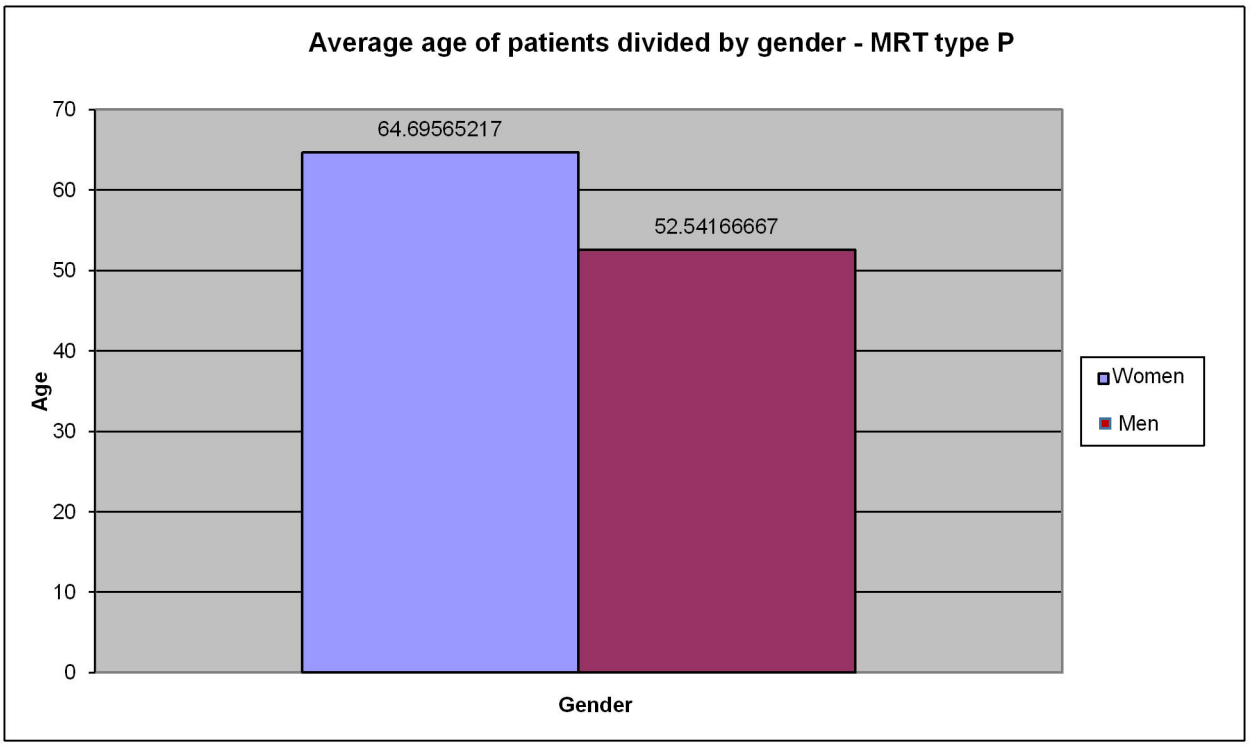

Chart 2. Mean age of patients by gender – MRT type P.

The mean age of the patients during the visits of the P type Medical Rescue Team was 64.70 years for women, and 52.54 years for men.

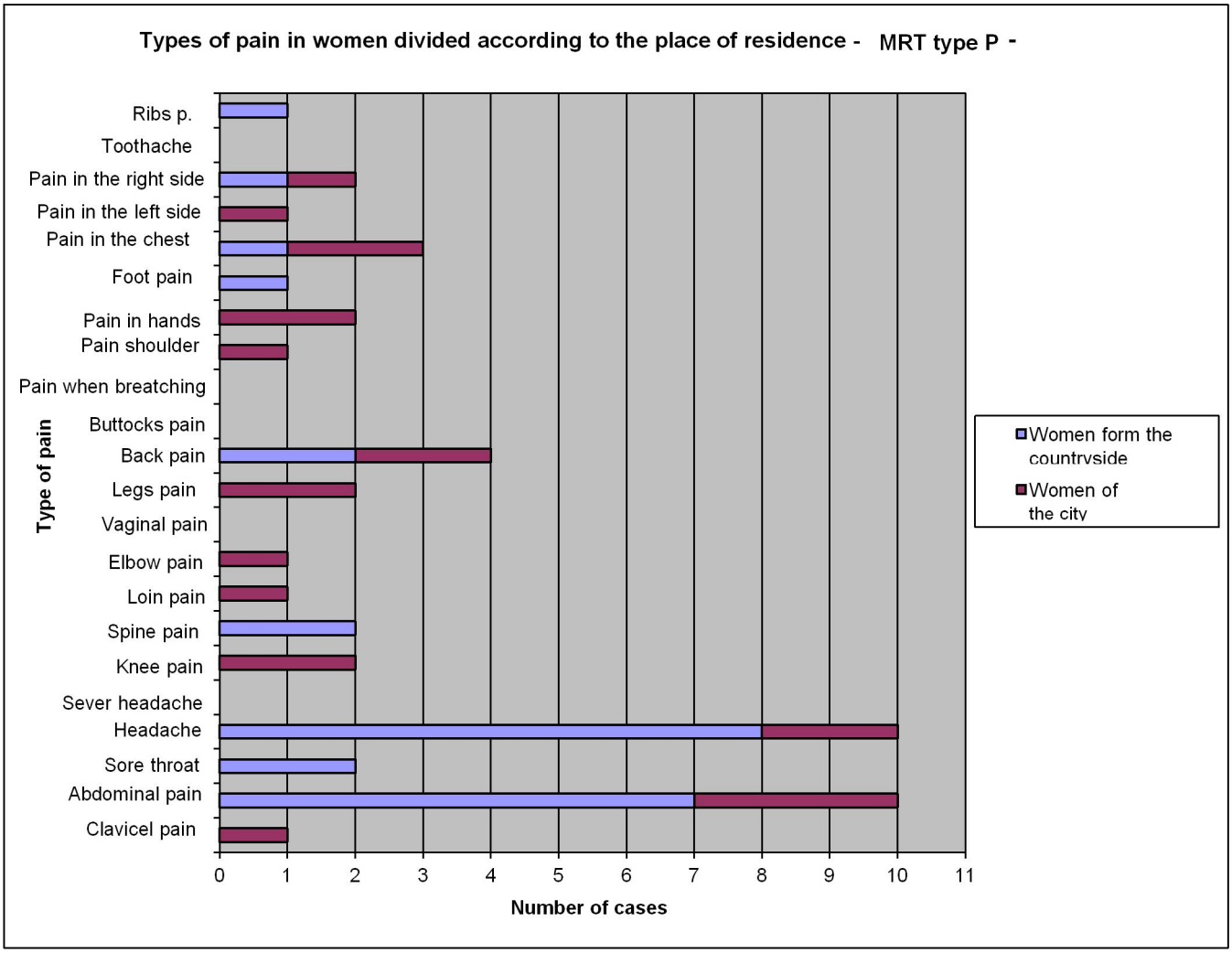

Chart 3. Types of pain in women, broken down by place of residence – MRT type P.

The most common types of pain reported by female patients during the P type Medical Rescue Team visits were headache, which was 21.7% of visits to women and 14.3% of all P type MRT visits, and abdominal pain, which was 21.7% and accounted for 14.3% of all P type MRT visits. Both types of pain were most often reported by women living in the countryside.

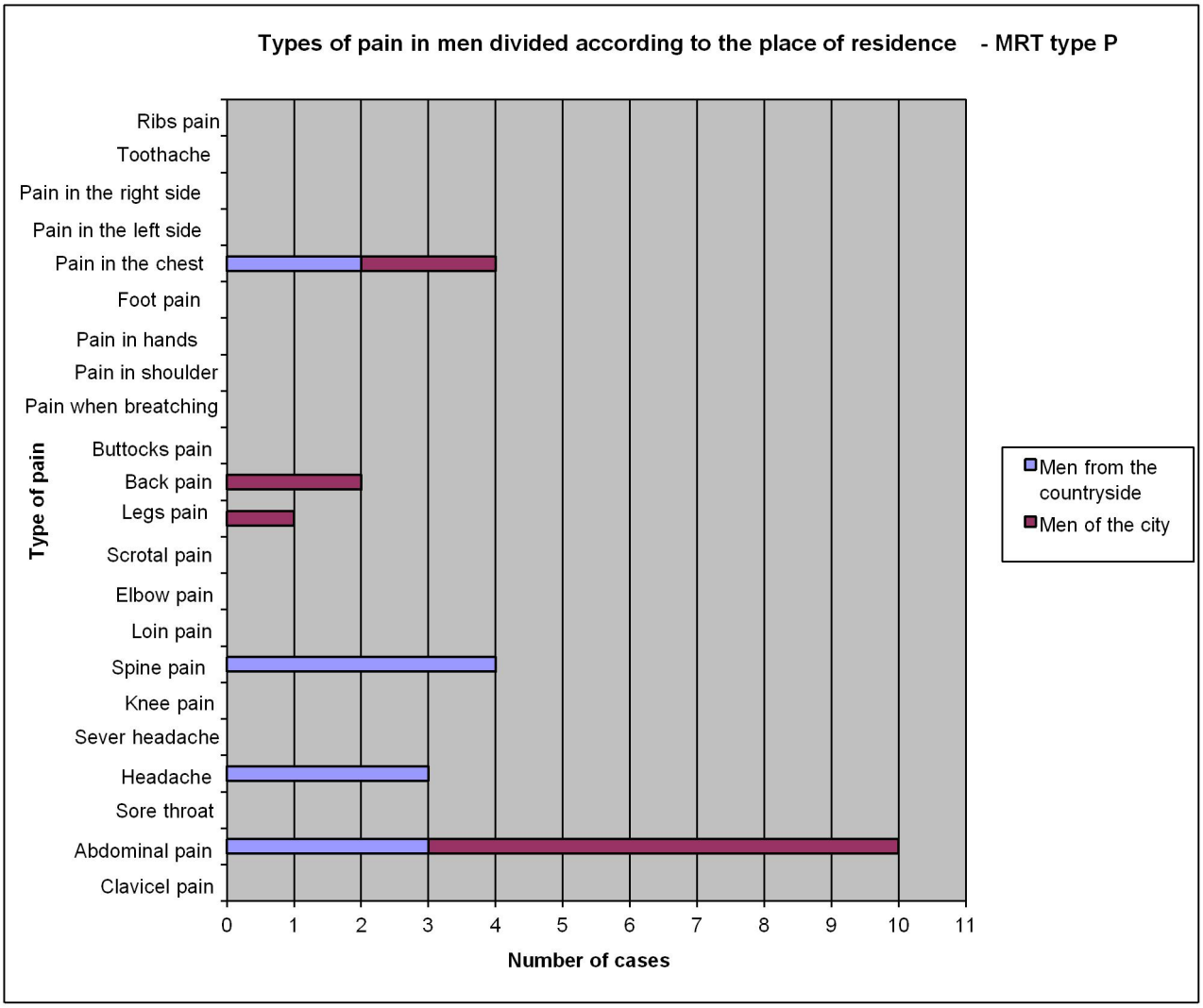

Chart 4. Types of pain in men divided by place of residence – MRT type P.

The most common type of pain reported by male patients during visits of the P type Medical Rescue Team was abdominal pain and accounted for 41.6% of visits to men and 14.3% of all P type MRT visits. Abdominal pain was most often reported by men living in the city.

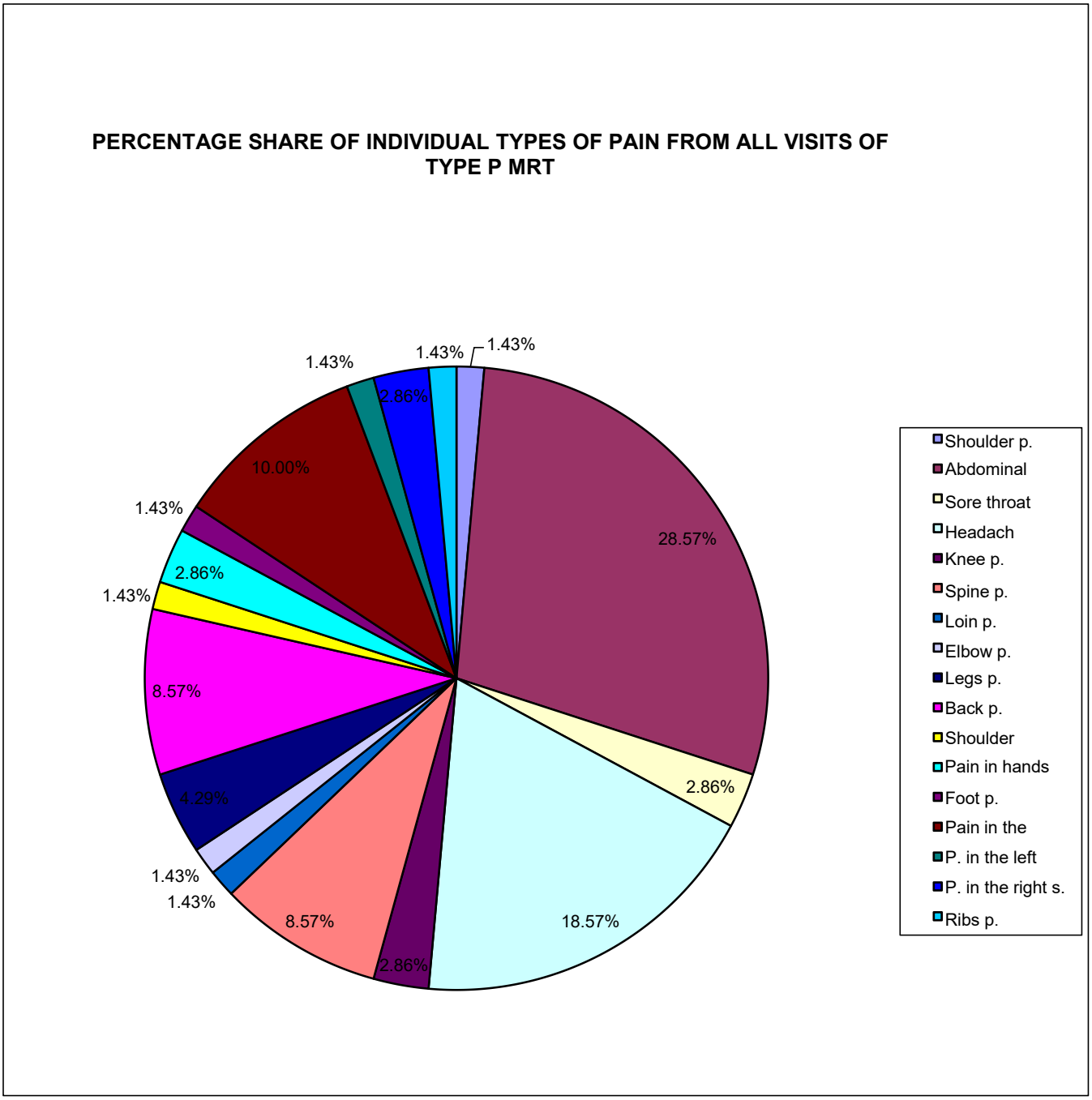

Chart 5. Percentage share of a particular type of pain from all P type MRT.

The most common type of pain reported by patients of the P type Medical Emergency Team was abdominal pain, which accounted for 28.57% of all visits. Headache, chest pain, back pain, and spine pain were also common causes of P type MRT calls.

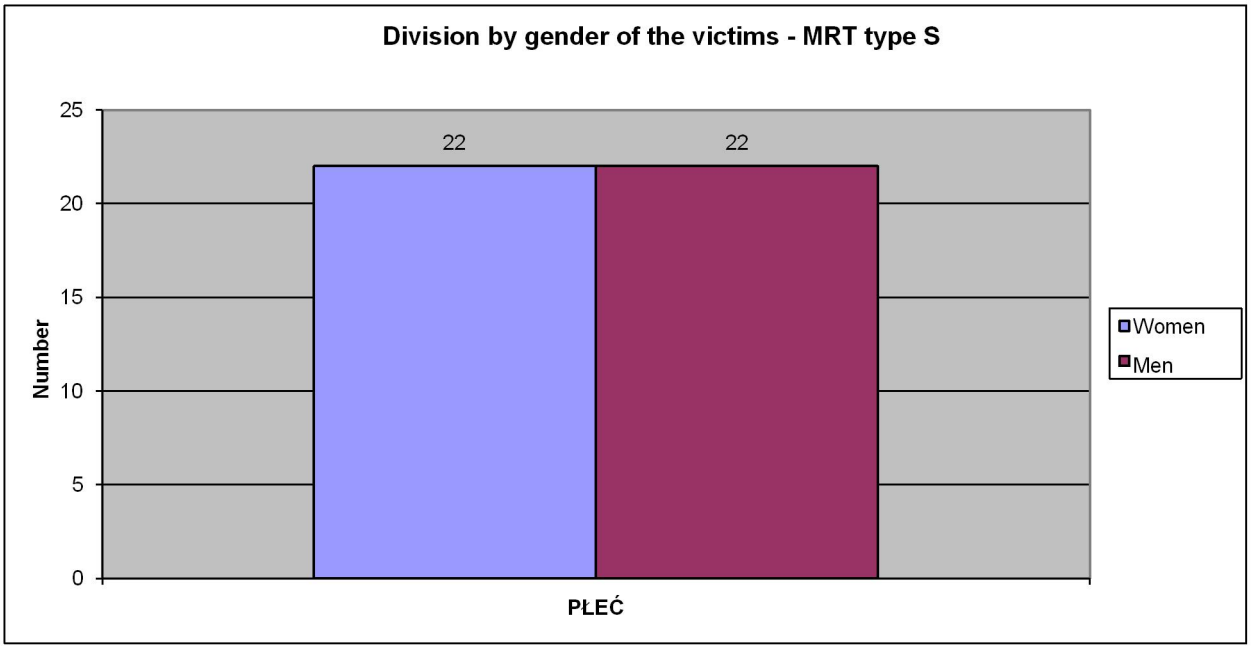

Chart 6. Division by gender of the victims – MRT type S.

For 44 visits of the S type Medical Rescue Team, patients of both genders called for MRT in the amount of 22, which accounted for 50% of visits for women and 50% of visits for men.

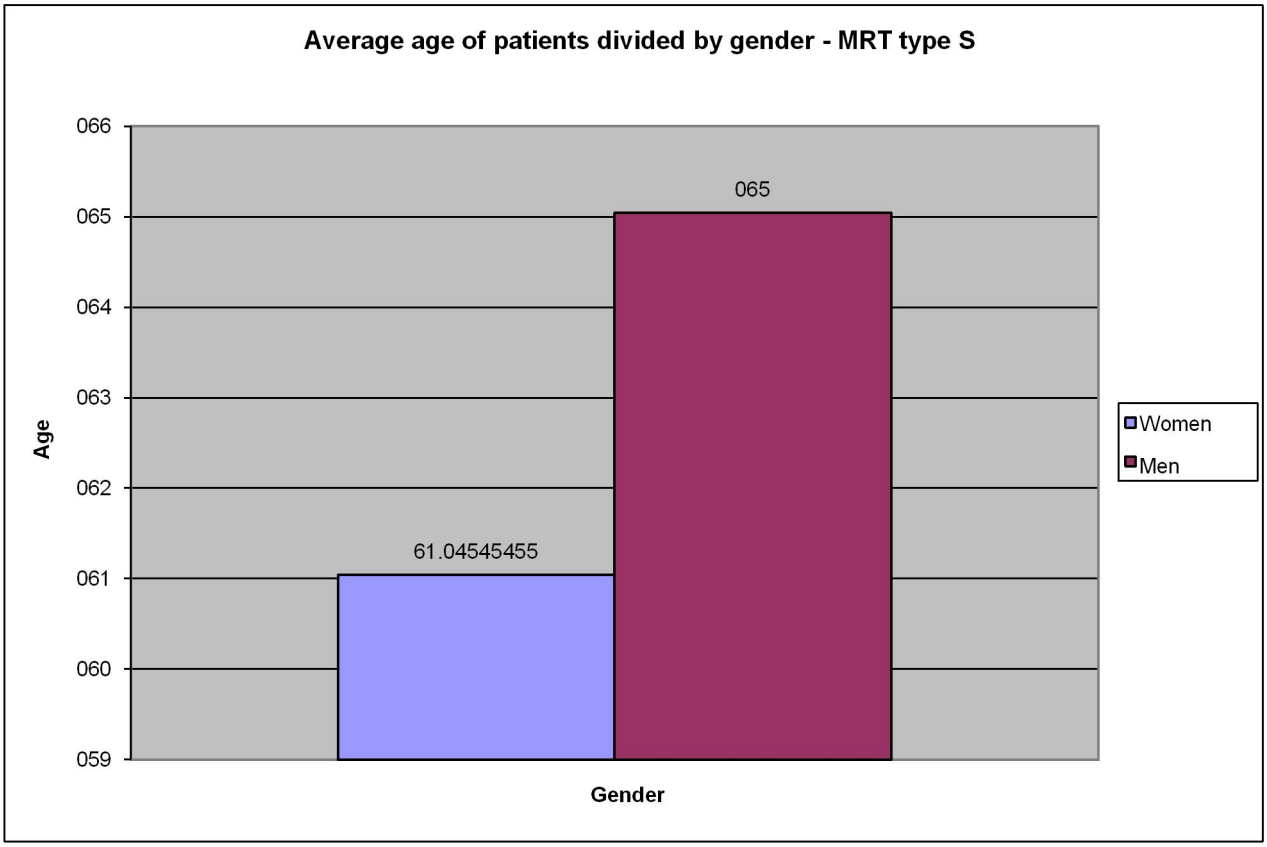

Chart 7. Mean age of patients by gender – MRT type S.

The mean age of patients in the S Medical Rescue Team visits was 61 years for women and 65 for men.

Chart 8. Type of pain in women, broken down by place of residence - MRT type S.

The most common type of pain reported by female patients during the visits of the S type Medical Emergency Team was chest pain and it constituted 22.7% of visits to women and 11.35% of all S MRT visits. Chest pain was most often reported by women living in the city.

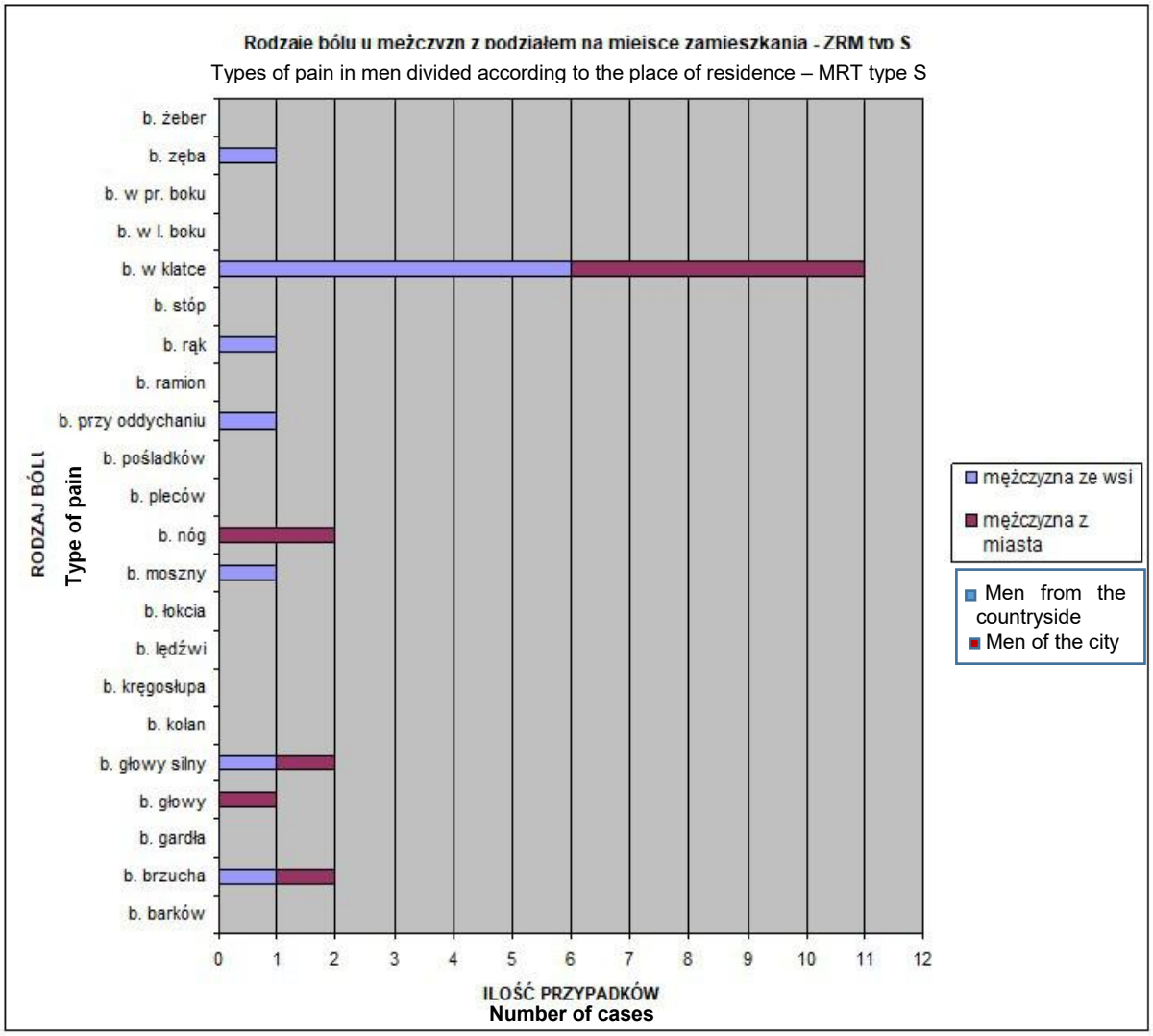

Chart 9. Types of pain in men broken down by place of residence – MRT type S.

The most common type of pain reported by male patients during visits of the S Medical Emergency Team was chest pain and accounted for 49.94% of visits to men and 24.97% of all S MRT visits. Chest pain was most often reported by men living in the village.

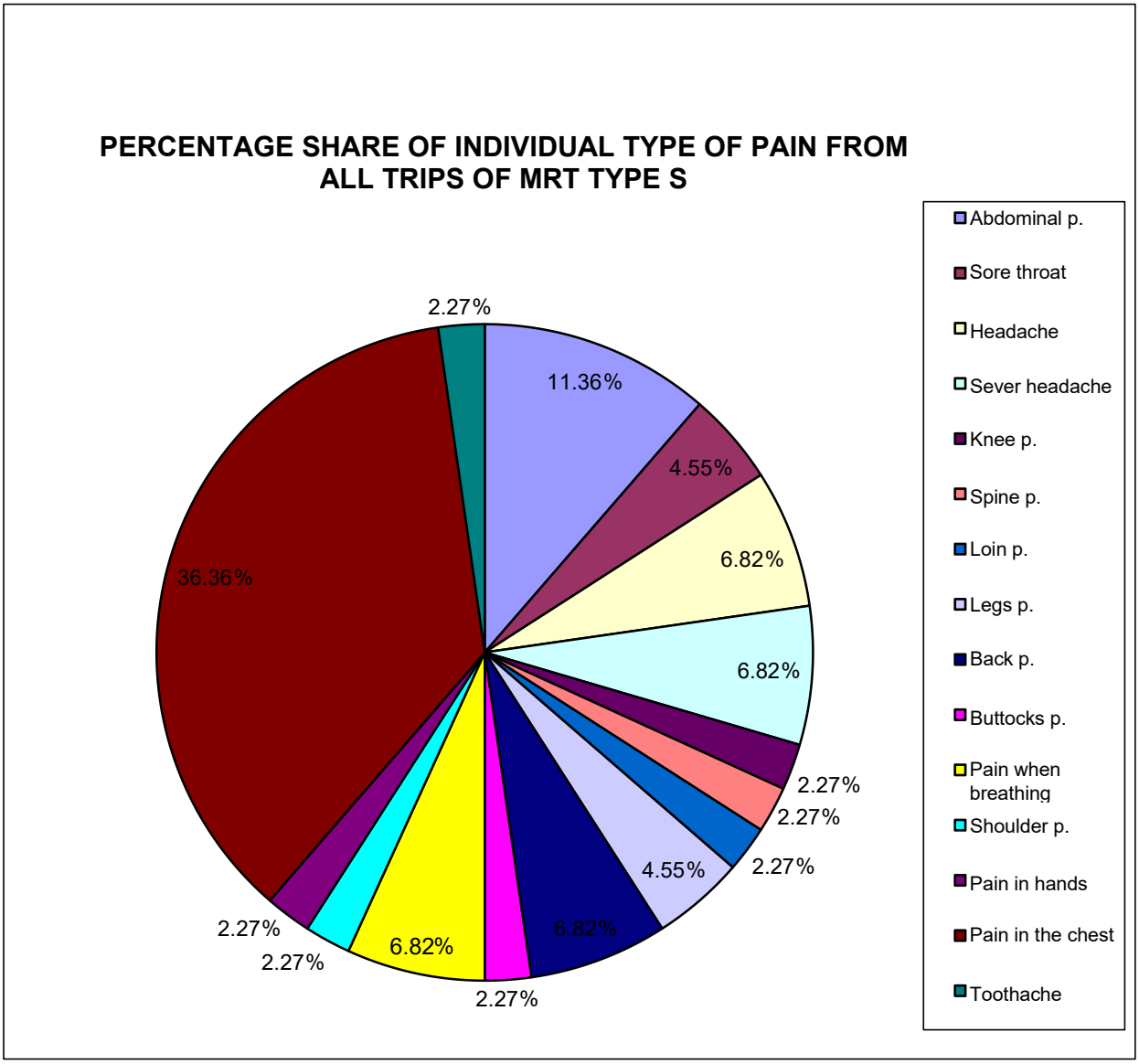

Chart 10. Percentage share of individual types of pain from MRT type S visits.

The most common type of pain reported by patients during visits of the S Medical Emergency Team was chest pain, which accounted for 36.36% of all visits.
Abdominal pain, headache, including very severe headache, pain on breathing and back pain amounted to 6.82% and thus constituted the second, most common reason for pain complaints reported by patients during MRT S visits.

Discussion

After analysing the collected data from the MRT S and P departure documentation, which consisted of 114 departure cards, in the case of MRT P the majority of visits concerned women living in the village. The mean age was 63.56 years. The most commonly reported types of pain were abdominal pain and headache. More women from the city reported chest pain. Abdominal pain was 28.57%, headache 18.57% and chest pain was 10% of all MRT P visits. Abdominal pain was most often reported by men living in the city. Headache was most often reported by men from the village, and chest pain was reported with the same frequency in men from the city and village.

For MRT S, the most frequent reports of patients for whom a specialist team was sent reported chest pain. The dominant gender was women living in the city. The mean age was 59.92 years. Chest pain accounted for 36.36% of all MRT S visits. Subsequently, MRT S were directed to patients with headache, including severe headache, pain while breathing and back pain. These ailments accounted for 6.82% of all MRT S visits. Chest pain, including severe headache, and abdominal pain were the most frequently reported by women from the city. On the other hand, pain while breathing and back pain were most often reported by women from the village. In this case, dependencies can be seen in the form of respiratory muscle complaints, neuropathy or myopathy, which are manifested by breathing pains or back pain.

In the case of men living in rural areas, MRT S were most often used for chest pain. The severe headache and abdominal pain were comparable between the men from the city and the village. MRT S in the case of men from the city was most often used for pain, the primary focus of which was accumulated at the level of the lower limbs.

It is worth paying attention to the issue of the residence of people who, in the aftermath of the emergency call, provided information about a given type of pain.

The phenomenon of the influence of environmental and cultural factors on the perception of pain is known [6]. The currently applicable pain scale in the SWD PRM system is a very important tool for assessing the intensity of pain in the practice of MRT teams that go to the scene to protect the patient.

However, a question arises whether it would not be a good solution in the Polish emergency notification system to introduce pain intensity assessment already at the stage of interview collection by the medical dispatcher? Of course, this is a topic for discussion on a larger scale. Pain is caused by various physical or chemical stimuli acting on the sensory (pain) nerve endings. Superficial skin pain is caused by irritation of skin pain nerve endings. Under the influence of certain stimuli, such as heat burns and chemicals, another type of pain occurs that is characterized by a long latency period and a long duration. Deep pain results from irritation of deep tissues with specific stimuli. The most common cause of such pain is hypoxia in the muscle, possibly resulting in the formation of chemical bodies of a stimulus nature. This pain most often arises during muscle work, when the demand for oxygen increases, and due to certain changes that narrow the vessels, the blood supply is hindered [7]. Bearing in mind chest pains, they often mask acute coronary syndrome (ACS), severe cardiac arrhythmias or traumatic ailments within the chest, which are directly life-threatening, through non-specific symptoms. Visceral pain is distinguished, in which fibres without the myelin sheath conduct pain stimuli from the heart, pericardium, lungs and all organs. They can be “blunt” or “diffused” pain. Precisely located pain is perceived as “sharp”. “Atypical pain” in the chest is a term often used to refer to pains that do not fit into any category [8]. A number of factors that accompany people in many aspects of their lives contribute to chest pain. There are modified and unmodified risk factors. Modified are those that are influenced by a person

through lifestyle modification or appropriate therapy. They include: hypertension, lipid disorders, diabetes, smoking, overweight/obesity, lack/low physical activity, improper nutrition, alcohol abuse, stress. Nonmodifiable risk factors include those the presence of which cannot be influenced. The nonmodifiable risk factors are: age, gender, family history, and the presence of cardiovascular diseases associated with atherosclerosis [9, 10].

Abdominal pain can be dull or diffused, acute of chronic. Additionally, there may be accompanying symptoms such as vomiting and diarrhoea. The essential state is the information whether the pain occurred suddenly and what is its location [11]. Headache is not a disease entity, but a symptom resulting from irritation of pain-sensitive structures in the head, face or neck. Patients with headache seek help from an emergency room for two reasons. First, the pain is different, or it is very strong. Secondly, the pain is the same as usual, but the patient has exhausted all treatment options known to him [12]. Referring to the data obtained, it can be stated that chest pain in urban residents is a more frequent reason for MRT calls than in rural residents, because these people work more often in public administration offices and in other facilities where they often spend their daily work cycle behind the desk with little movement, experience a greater dose of professional stress and use stimulants more often.

Abdominal pain comparable in both surveyed groups of urban and rural residents is probably the result of incorrect eating habits, taking into account frequent dietary mistakes committed by society [13]. It should also be kept in mind that abdominal pain is often a symptom of a serious health or life threat. Elderly people constitute a special group of these patients.

A very important element in the practice of medics working in MRT is the relief of the patient's pain. Numerous scientific publications present current guidelines in the fight against pain at the MRT level.

There is no clear cause for headache, which is more common in people living in rural areas. The headache is often transient, progressive, sudden, dull or acute, and may suggest a subarachnoid haemorrhage. Many times headaches are a symptom of migraines and many other causes.

Very often among medics working at MRT teams, you can hear that it is enough to consult a patient who reports pain by telephone, assessing the pain mechanism and its intensity in the most popular pain scale NRS (Numerical Rating Scale). The numerical scale is easy to apply and has been shown to be very sensitive and reliable compared to other pain scales. The scale includes 11 pain levels, from 0 to 10, with 0 being no pain at all and 10 being the worst pain imaginable. This scale is characterized by high repeatability of results and is useful in scientific applications. Due to its comprehensibility for patients and ease of use, it is currently recommended in clinical practice for both acute and chronic pain assessment.

It is not recommended to use the NRS scale in children aged <9 years old [14].

Of course, there is a certain risk on the part of medical dispatchers related to the possible failure to dispatch MRT at the scene of the event to a patient with pain and professional consequences. However, in the author's opinion, it is justified to improve the scheme of conducting the dispatcher's interview based on the national scheme with the assessment of the pain intensity scale. This would enable the creation of procedures that would further define the necessity or not of disposing MRT to patients who report pain as the cause of the call.

Based on own observations, the author argues that in many places in Poland, depending on the region, the specificity of the work of medical dispatchers in terms of receiving emergency reports is different.

It should also be noted that the Polish society largely overuses painkillers, thus weakening the sensitivity of the receptors to their use. Therefore, a cause-and-effect relationship can be

sought, consisting in the fact that patients exhaust the ad hoc forms of pharmacological pain management in the form of, most often, non-steroidal painkillers, anti-inflammatory drugs and ask for help from MRT teams.
The legitimacy of disposing of MRT to the scene of an accident should be strictly adhered to in accordance with the norms specified in the Act on the State Medical Rescue and not dictated by personal feelings or pressure on the dispatcher receiving the call from the person calling the emergency number at the dispatcher's intuition.
Procedures for both MRT and dispatchers' work are the key solution.
Of course, the improvement of the above-mentioned elements is a long-term process, it requires a massive social campaign in the media and not only, as well as proper provision of services by GPs in the form of, among others, reliably informing patients about compliance with medical recommendations and treating patients comprehensively at the level of primary health care. In this matter, unfortunately, the majority of MRT employees speak very unfavourably. Many times, patients receive information by calling their primary care physician for advice or prescription to call 999 or 112 in a situation where, for example, he has run out of drugs instead of performing his medical duties or after an interview, advise the patient to go to the Night and Christmas Medical Care or called such help to the place of residence.
This state of affairs causes conflicts between the dispatcher and patient, the dispatcher and general practitioner or dispatcher – MRT.
Referring to the material analysed in the publication, the author presented through the diagrams the types of pain that are reported as the cause for calling for MRT by patients and do not belong to the category of immediate health or life threatening conditions, but protection at the level of primary health care.

Conclusions

When making a comparative analysis of MRT P and S, the author states that on the basis of the data obtained from the departure documentation of both MRT, a "trio" of classic and most common reasons for calls was obtained, and thus MRT disposition on the example of a selected city in one of the voivodeships in Poland.
These are:
1) chest pain, which is more often reported by city dwellers of both genders;
2) abdominal pain, which occurs in a very similar frequency of calls by both urban and rural residents;
3) headache, which was reported more often by inhabitants of rural areas.

It is worth improving the process of identifying pain intensity at the level of the dispatcher's interview and creating procedures that will directly decide whether or not MRT is available for events in which pain ailments appear.

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