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LONELINESS IN THE PRACTICE OF EMERGENCY MEDICAL TEAMS: A CASE STUDY

SAMOTNOŚĆ W PRAKTYCE ZESPOŁÓW RATOWNICTWA MEDYCZNEGO: STUDIUM PRZYPADKU

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B. Data collection/entry
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Summary

Background. Loneliness is a common phenomenon among human populations worldwide. Elderly people are particularly affected by loneliness due to difficulties in using communicators (telephone, social media) providing remote contact. National Emergency Medical Service (EMS) entities are the units responsible for undertaking medical rescue operations on the scene of an incident and qualified patient transport. The ambulance equipment, including measuring and monitoring devices, dressing articles, pharmaceuticals and procedures used by medical rescue teams are dedicated mainly to urgent cases.
Material and methods. The study comprised a 3-year retrospective analysis of trips performed by the EMS between Jan. 1, 2020, and Dec. 31, 2022, to a female patient living alone. The following measures were calculated to characterize the variables: number (n) and frequency (%), in addition Min, Max, Mean and Standard Deviation (SD).
Results. In the period under observation, 49 EMS interventions were performed. There were 1085 days (2 years; 11 months; 21 days) between the first and last intervention under observation. The highest intensity of calls occurred in March 2020 (n=9), and May 2020 (n=10); the largest intervals between the calls occurred in the second half of 2022. The share of events in particular years was as follows: 2020 (n=33), 2021 (n=10), 2022 (n=6).
Conclusions. Loneliness and lack of care from the family affects the condition of chronic diseases. The frequency of EMS calls in the described case was higher at night. An increase in the frequency of interventions corresponded with the period of the beginning of the SARS-CoV-2 epidemic in Poland as a new unknown threat. Predominantly pharmacology in the form of sedatives, analgesics and drugs lowering hypertension, was used which was a response to the needs of the patient's clinical condition.

Keywords: loneliness, Emergency Medical Services, interventions, emergency, elderly

Streszczenie

Wprowadzenie. Samotność jest powszechnym zjawiskiem wśród populacji ludzkich na całym świecie. Problemem samotności szczególnie dotknięte są osoby starsze, ze względu na trudności w posługiwaniu się komunikatorami (telefon, media społecznościowe) zapewniającymi kontakt zdalny. Podmioty Państwowego Ratownictwa Medycznego (RM) to jednostki odpowiedzialne za podjęcie medycznych czynności ratunkowych na miejscu zdarzenia oraz kwalifikowany transport pacjenta. Wyposażenie ambulansu, w tym aparatura pomiarowo-monitorująca, artykuły opatrunkowe, farmaceutyki oraz procedury stosowane przez zespoły ratownictwa medycznego dedykowane są głównie do stanów nagłych.
Materiał i metody. Badanie obejmowało 3-letnią retrospektywną analizę wyjazdów RM w okresie od 1 stycznia 2020 r. do 31 grudnia 2022 r. do pacjentki mieszkającej samotnie. W celu scharakteryzowania zmiennych wykorzystano następujące miary: liczbę (n) i częstość (%), dodatkowo Min, Max, Średnia i Odchylenie Standardowe (SD).
Wyniki. W okresie objętym obserwacją wykonano 49 interwencji RM. Pomiędzy pierwszą a ostatnią obserwowaną interwencją upłynęło 1085 dni (2 lata; 11 miesięcy; 21 dni). Największe natężenie wezwań wystąpiło w marcu 2020 r. (n=9) oraz w maju 2020 r. (n=10); największe przerwy między wezwaniami wystąpiły w drugiej połowie 2022 r. Udział zdarzeń w poszczególnych latach: 2020 (n=33), 2021 (n=10), 2022 (n=6).
Wnioski. Samotność i brak opieki ze strony rodziny może pogłębić dolegliwości rozpoznanych chorób. Częstotliwość wezwań RM w opisywanym przypadku większa jest w porze nocnej. Wzrost częstotliwość interwencji koreluje z okresem początku epidemii SARS-CoV-2 w Polsce jako nowego nieznanego zagrożenia. W prezentowanym przypadku stosowano farmakologię w postaci leków uspokajających, przeciwbólowych i obniżających nadciśnienie tętnicze, co jest odpowiedzią na zapotrzebowanie stanu klinicznego pacjentki.

Słowa kluczowe: samotność, ratownictwo medyczne, interwencje, nagłe wypadki, osoby starsze

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Introduction

Loneliness is a common phenomenon among human populations worldwide. Elderly people are particularly affected by loneliness due to difficulties in using communicators (telephone, social media) providing remote contact. The period of the SARS-CoV-2 virus pandemic greatly exacerbated the incidence and the feeling of loneliness among people over 60. Separation and forced isolation of elderly people have negatively affected every aspect of their lives. As a natural phase of the biological processes, ageing is often a period of living alone. Elderly people are often lonely for economic reasons (lack of funds for a professional care home for senior citizens), and social reasons (death of the spouse, children moving out of the family home). Elderly people become isolated from their families and feel lonely. Such people often rely on the medical service visiting them, for they are unable or unwilling to go to the doctor themselves [1,2].

Loneliness when combined with a diagnosed chronic illness can result in faster progression of a disease. Age-related limitations and chronic illnesses are more pronounced in lonely people. This is exemplified in the case presented here, where the psycho-physical condition was burdened by loneliness [3].

National Emergency Medical Service (EMS) entities are the units responsible for undertaking medical rescue operations on the scene of an incident and qualified patient transport. The ambulance equipment, including measuring and monitoring devices, dressing articles, pharmaceuticals and procedures used by medical rescue teams are dedicated mainly to urgent cases. Often, calls to the EMS come from chronically ill patients (e.g. with oncological or mental diseases), and are due to exacerbation of the symptoms of the underlying disease, deterioration of the health condition, worsening of the condition or pain complaints [4].

The pharmacological treatment used by emergency medical teams (EMTs) depends on the regulations divided into specialist teams “S” (with a doctor) and basic “B” (without a doctor). The medications that can be administered by a paramedic on their own are specified by the Regulation of the Minister of Health of December 16, 2019, and the appendix (list) contained therein constitutes the framework pharmacological equipment [5].

There is a negative phenomenon of unjustified EMS call-outs, viz. interventions to patients with non-life-threatening health problems or in need of other non-medical care. Among the unjustified call-outs there are causes related to:

- alcohol abuse,
- family quarrels,
- lack of adequate care for an elderly person,
- a mental disorder, in a person who is not a danger to himself/herself or those around him/her, but who does not receive an appropriate treatment (e.g. regular administration of prescribed medication) [6].

Ageing people experience a wide range of difficulties in most spheres of their functioning. Characteristic for this period of life, deficits relate to physical and mental fitness, and there is a limitation of social contacts. The absence of relatives in the physical sense (no common or close place of residence, rare visits, or complete loss due to the death of loved ones) is a heavy burden. Another important factor influencing the quality of old age is the personality of the geriatric patient, their current way of functioning and coping with difficult situations [7].

The increase in the number of people with disabilities is proportional to their age, which results in an increased demand for help from people with limited independence. 30% of these people are over 60; and 60% after the age of 80 require constant help. It is estimated that 4 million people in Poland will require long-term care by 2030, including nursing, rehabilitation, pharmacological and dietary care [8].

Single people are more likely to need long-term care, which is often provided by non-related people. During a difficult period of life, single people use the help of neighbors, friends, and, as a last resort, social welfare centers [9].

In 1990, people aged 65 and over accounted for only 10.2% of the world's total population, while in June 2018, people in this age category >17% of the total population, or approximately 6.6 million [10].

This manuscript presents the case study of a single patient who frequently calls the EMS over a three-year period. The purpose of the analysis is justified by the authors' observations on the functioning of the State Medical Rescue entities, both the outpatient (teams) and the inpatient part of the Hospital Emergency Department, increasingly used by single or elderly patients who do not have properly organized family or institutional care.

Material and methods

The study comprised a 3-year retrospective analysis of trips performed by the EMS between January 1, 2020, and December 31, 2022, to a female patient aged over 60. The data were derived from the documentation produced after the intervention of the EMS, i.e. the departure order card (EDC), and the emergency medical response card (EMRC). The database was compiled in MS Excel for Windows 10. In June 2022, permission was obtained from the Director of the unit implementing the EMT travel orders to gain access to the travel documentation. The data of the patient and persons participating in the interventions included in the observation are anonymous in accordance with the principles of the Declaration of Helsinki.

The following measures were calculated to characterize the variables: number (n) and frequency (%), and in addition Min, Max, Mean and Standard Deviation (SD).

Case description

A woman aged about 60 years (58 – at the beginning of observation, 61 years – at the end of observation) living alone in a rural area, who frequently had interventions by the EMS. The observation lasted for 3 years, during which time 49 interventions were recorded. Most of the interventions were at the patient's own call.

The patient is diagnosed with: obesity, arterial hypertension, gonarthrosis of the knee joints and a condition after myocardial infarction (treatment in the hemodynamics department in 2015). Information obtained from the department of internal medicine cards.

During each intervention, a medical history was collected from the patient, and the patient frequently repeated some specific phrases:

- "doesn't want to go to hospital",
- "wants to talk to someone",
- "She demands to be transported to a nursing home; the family does not want to care for her",
- "She lives alone; she has no one to talk to",
- "everything annoys",
- "during the winter period, there is no one to stoke the fire",
- "bad weather ".

In most of the interventions, the patient was oriented auto- and allo-psychically. The behavior and statements exhibited by the patient may have been indicative of a deterioration of her mental state. The patient's medical records were in disarray and there was no chronology of information (discharge) sheets from hospital treatment. The patient did not exhibit behaviors endangering her health and life, or a threat to her surroundings, such as aggressive behavior, dysphoric disorders, or impulse control disorders. She required only some emergency intervention providing her with a sense of security, reduction of pain complaints, reduction of anxiety, fear, and thus to ensure her a sense of experiencing relief [11].

In accordance with the guidelines for the management of the EMS, and the model of the medical records produced during the intervention (EDC and EMRC), the following data were obtained and analyzed [12]:

- frequency of calls during the observation period,
- the hour/time of the call in relation to the time of day (day/night, taking into account the time of year and the varying cycles of day and night),
- intervention time,
- the reason for the call,
- the person calling,
- rescue procedure,
- medical diagnosis according to International Statistical Classification of Diseases (ICD-10) standard,
- basic vital signs,
- electrocardiogram (ECG) diagnostics,
- use of pharmacological treatment [13].

Results

In the period under observation, 49 EMS interventions were performed. There were 1,085 days (2 years; 11 months; 21 days) between the first and last intervention under observation. The frequency of calls to the patient is described in Table 1.

Table 1. Characteristics of call frequency

Intervention interval	n	Intervention interval	n
< 1 day	8	6 days	0
1 day	5	7 days	2
2 days	6	8-30 days	6
3 days	2	31-60 days	5
4 days	4	61- 100 days	5
5 days	3	> 100 days	3

The data in Table 1 present approximate values expressed in hours and days regarding the frequency of calls to the EMS; the highest intensity of calls occurred in March, 2020 (n=9), and May, 2020 (n=10); the largest intervals between the calls occurred in the second half of 2022. There is a noticeable increase in interventions at the beginning of the SARS-CoV-2 epidemic, which may have been influenced by the numerous restrictions, limitations and fear of a new threat.

The intervention time (Table 2) EMS correlates with rescue procedures and the team's decision to transport the patient to the hospital, which significantly prolonged the intervention. The intervention time is counted from the moment of departure to the event, to the end of the intervention, optionally:

- leaving the patient at home – the time marked on the service mobile device – a tablet with the decision support system (DSS),
- transfer of the patient to the hospital emergency department (ED).

Other characteristics of the EMS interventions, including transport to the hospital and the use of pharmacology, are presented in Table 3.

Distribution of interventions by year of observation:

- 2020 – 33 interventions,
- 2021 – 10 interventions,
- 2022 – 6 interventions.

Table 2. Intervention time characteristics

Variable	Min	Max	Mean	SD
Intervention interval (days)	0.1	131	22.5	30.5
Intervention length (minutes)	24	105	47.7	20.08

Table 3. General characteristics of the intervention of the EMS

Variable	Variable details	n	%
Call – according to the EMT division of the day shifts	7.00-18.59	26	53.06
	19.00-6.59	23	46.94
Call at dusk *	YES	32	65.30
	NO	17	34.70
EMT procedure	Hospital transport	10	20.40
	Stayed **	39	79.60
Pharmacology	YES	37	75.51
	NO	12	24.49
Calling EMT	Personally	47	95.91
	Other people	2	4.09
ECG performed ***	YES	15	30.62
	NO	34	69.38

Notes: EMT – emergency medical teams; ECG – electrocardiogram; * taken into account was the time of sunset according to the annual calendar and the civil twilight values were adopted, i.e. the position of the sun's disc 6 degrees below the horizon (approximately 45 minutes before and after sunset) [14]; ** all ambulance calls were made in order to travel to the patient's place of residence (home); *** a variable included due to the common cause of call being related to chest discomfort: pain, palpitations, burning.

The data presented in Table 4 shows some differences between the content of the call (made mainly by the patient herself) and the ICD-10 medical diagnosis, which followed the verification of the EMS on the basis of (the medical history, physical examination, measurement and assessment of basic vital parameters, and the performance and assessment of ECG). The vital parameters measured and assessed by the paramedics according to the guidelines were: blood pressure (BP), heart rate, saturation, capillary blood glucose measurement. In most of the interventions the BP values were elevated, which correlates with the patient's diagnosis of hypertension, taking into account the irregular administration of medications prescribed. In anamnesis, the patient confirmed the lack of a regular follow-up with the general practitioner (GP) on the basis that there was: "no one to drive".

Table 4. Correlation of the reason for call vs ICD-10 diagnoses including pharmacotherapy

Int.	Cause	Pharmacology	ICD-10	Int.	Cause	Pharmacology	ICD-10
1	Heart palpitation	Hydroxizine	R07	26	Bad mood	-	F09
2	Chest pain, neurosis	Hydroxizine	R53	27	Stomach ache	Metamizole, papaverine	R10
3	Chest pain, neurosis	-	R07 R53	28	Headache	Metamizole	R51
4	Chest pain	Captopril, hydroxizine	R07	29	Chest pain, fever	Metamizole, hydroxizine	R69
5	headache, neurosis	Metamizole, hydroxizine	R51	30	High BP	Hydroxizine	R53
6	Chest burning, high BP	Hydroxizine	R53	31	Chest pain	Captopril, hydroxizine	I10
7	High BP, bad mood	Hydroxizine	Z53	32	High BP	Captopril	F48.9
8	Bad mood	Metamizole	R53	33	Chest pain	-	R07 R51
9	Bad mood	Ketoprofen	M79	34	Chest pain	Hydroxizine, captopril	R53
10	Chest pain, legs swelling	Captopril, furosemide,	I87 I10	35	Chest pain	-	Z00.8
11	Chest burning, legs swelling	Captopril	I10	36	High BP	Hydroxizine	R07 F43
12	Chest burning, high BP	-	R53	37	Legs pain	Ketoprofen, hydroxizine	R53
13	Severe pain in legs	Hydroxizine	R53	38	Legs pain	Metamizole	R53
14	Headache	Ketoporfen hydroxizine	R53	39	Legs pain	Ketoprofen	R53
15	Neurosis	Hydroxizine, captopril	F43	40	Legs swelling	Ketoprofen, hydroxizine	M16
16	Legs pain	Metamizole, hydroxizine	Z53	41	Chest pain	Captopril	R07 R51
17	Bad mood	-	M15	42	Chest pain	-	R07
18	Chest burning	-	R07	43	Chest pain	-	R53
19	High BP, nervous	Hydroxizine	F43	44	Chest pain	Hydroxizine	R53
20	Headache	Hydroxizine	F43 F06.2	45	Chest pain	Hydroxizine	Z01 R53
21	Mental disorders	Metamizole, hydroxizine	R10 F06.2	46	Mental disorders,	-	Z76
22	Chest pain, dyspnoea	-	Z73	47	Stomachache	-	R10
23	Whole body pain	Hydroxizine	F43	48	Chest pain	Metamizole	R52.2
24	Legs pain	Hydroxizine	R53	49	Chest pain	Hydroxizine	R53
25	Heart palpitation	Hydroxizine	R07	-	-	-	-

Notes: int – subsequent intervention, BP – arterial blood pressure.

Source: self-reported results and list of codes (medical diagnoses) according to ICD-10 classification [13].

The patient's state of consciousness was assessed by the Glasgow Coma Scale (GCS), according to which the patient scored the maximum (15 pts) in 47 interventions, and at 13 pts (due to confusion) in two interventions. A pharmacological treatment was administered in 37 interventions with 1, 2, or 3 preparations, mainly as an intramuscular injection, or a sublingual tablet (captopril). The results are graphically presented in Figure 1.

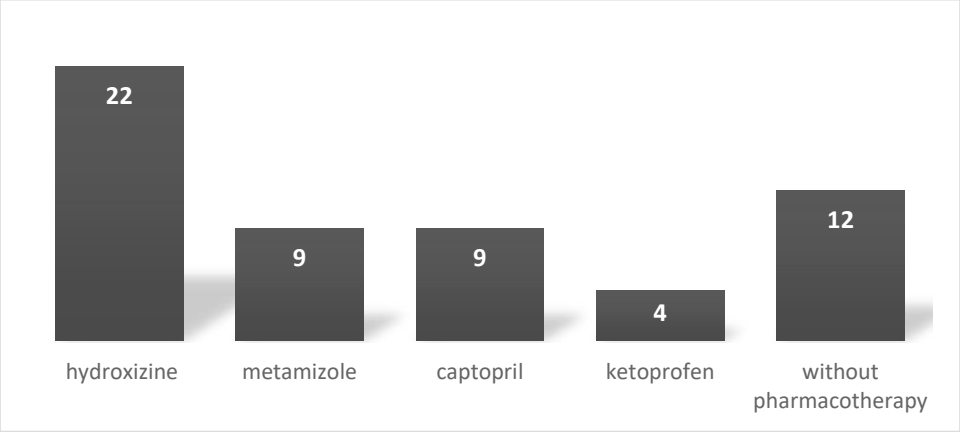

Figure 1. The most frequent decisions on the pharmacotherapy, made in the case study

In the observed interventions (Figure 1), the most frequently used medicaments were:

- hydroxyzine – a preparation with a calming, anxiolytic and itching effect,
- metamizole – a preparation with analgesic, antipyretic and spasmolytic effects,
- captopril – a preparation with a rapid pressure lowering effect, administered on an ad hoc basis.

The preparations administered resulted from the EMT diagnoses and the needs of the patient: malaise, pain in the limbs, pain in the chest, high BP [15-19].

Discussion

In the literature on the EMS's interventions, the phenomenon of unjustified calls is known. The observation of the case presented, in the authors' opinion, repeatedly could have such features; however, there are no objective tools for evaluating decisions affecting the decision to call an ambulance. The results obtained show that after an EMS intervention in which there was no indication for transport to hospital, the patient called the emergency number again in order to go to hospital. The problem of unjustified calls made to the EMS was noted in an analysis as early as in 2014; the analysis concerned patients with non-life-threatening medical problems [20].

Badal et al. [21], in a study of loneliness based on differences in language features, estimated the occurrence of loneliness in individuals. The tool could be widely used despite the limitations of commercially developed natural language understanding programs. The results of our own study cannot be unequivocally related to this issue, despite the fact that the described case is of a female gender, the authors did not have any tool that could unequivocally determine loneliness based on the choice of words used by the patient. Our study was based on a conscious logical contact and medical interview in which the patient admitted that she felt lonely and had no one to look after her.

Todorova et al. investigated the involvement of nurses in the practice of the ERT in Sweden, who have to assess unassisted the physical and mental state of the patient, as well as to observe, implement and evaluate a patient's care and treat when necessary, including a large share of psychiatric patients [22]. Another study regarded joint simulation exercises between the police and emergency response teams for mental health interventions [23].

Many researchers have drawn attention to the problem of loneliness of the elderly, even before COVID-19. Kotwal et al. studied social isolation using an assessment scale taking into account risk factors for isolation and loneliness [24]. There are no tools, however, for this type of assessment in EMS procedures. The authors of the 2018 study [25] focus on discoveries regarding the relationship between loneliness and health, e.g.

cardiovascular diseases, hypertension, atherosclerosis, stroke and metabolic disorders such as obesity. These results partially coincide with our own observation of comorbidities in the analyzed case.

Isolation and loneliness is a topic raised by Somes [26] with the conclusion that there is no quick or concise tool that could be used in the emergency department to detect these problems by staff. We have similar observations in our own analysis described in the *Limitations* section.

According to Freedman et al. [27], social isolation and loneliness are very common in the elderly and are associated with significant morbidity and mortality, which should motivate GPs to initiate new services.

In the analysis of the use of the EMT units from 2019, in the total number of patients who received medical assistance as part of pre-hospital rescue, the percentage of people aged +65 was > 40% [28].

Extensive research material on the subject of dysfunction and limited independence of the elderly has been performed in the nationwide PolSenior study, a research project on specific areas of the health of the elderly and health-related quality of life carried out on a large population of 5,695 people in the age range matching the discussed case in our own study. The authors point to the spatial dispersion of the modern family (labor market, education) and the greater mobility of younger family members, which results in loneliness and the sense of loneliness of the elderly [29].

Limitations

A limitation of our observation is the lack of system tools (e.g. questionnaires or procedures) to reliably assess whether the call is justified or not, and the impact of mental disorders on the decision to call an ambulance. The variable, which is the increased frequency of EMS calls and the phenomenon of loneliness of an elderly person, allows for subjective conclusions about the lack of legitimacy of some of these calls; however, proving this legitimacy is not the main purpose of our analysis, but to draw attention to the use of the EMS system units for states that are not a sudden threat to health and life, and in accordance with the provisions of Art. 1 of the EMS Act, the system which was established to intervene in emergency situations [4].

Conclusions

Loneliness and lack of care from the family affects the condition of chronic diseases. The frequency of EMT calls in the described case was higher at night. An increase in the frequency of interventions corresponds with the period of the beginning of the SARS-CoV-2 epidemic in Poland as a new unknown threat. Pharmacology in the form of sedatives, analgesics and lowering hypertension, which is a response to the needs of the patient's clinical condition was the predominant response.

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