Cogitare Enfermagem

ORIGINAL ARTICLE

The profile of frequent user of a Multipurpose Emergency Service: an archipelago reality

HIGHLIGHTS

1. Improvement of healthcare activity with integrated strategies.
2. Use of emergency services requires strategic interventions.
3. Demand factors include accessibility to primary healthcare.
4. Temporal patterns indicate daytime peaks in demand.

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ABSTRACT

Objective: to analyze the profile of frequent users of a Multipurpose Emergency Service in the Azores, Portugal, relating sociodemographic, clinical and time characteristics. **Method:** a retrospective study with a quantitative approach on the use of a Multipurpose Emergency Service in the Azores, Portugal, from January 1 to December 31, 2022. The population included all users with four or more visits. Data were extracted from Glintt Healthcare® in October 2023, with descriptive statistical analysis. **Results:** 6,553 (11.8%) were frequent users, predominantly female (55.8%), ≤ 30 years old, single (54.6%), living in Ponta Delgada (60.3%) and who sought treatment without referral (97%). They arrived by ambulance (16.7%), with low and non-urgent priorities (50%), presenting at least one comorbidity (67%), hospitalization rate (8.6%) and higher demand on Mondays (15.8%). **Conclusion:** it is urgent to integrate primary and hospital care, promoting partnerships to improve care, assessing whether vulnerabilities influence the excessive use of the healthcare system.

DESCRIPTORS: Health Profile; Sociodemographic Factors; Health Services Misuse; Emergency Nursing; Health Services Needs and Demand.

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INTRODUCTION

The emergency room (ER) is, for several reasons, considered the gateway to the National Healthcare service (NHS)[1], "with an increasing number of patients and increasing demands for quality, along with the need to reduce costs"[2:17]. The ER is characterized as a multidisciplinary and multiprofessional unit whose mission is to provide healthcare in all situations classified as emergency. Emergency situations are considered to be those that, due to their severity, according to appropriate clinical criteria, require immediate medical intervention[3].

Currently, in Portugal, there are three levels of ERs: Basic ERs, which are the first point of care and are available whenever the time to access a higher-level service exceeds 60 minutes; Medical-Surgical ERs, which form the second level and are strategically positioned to ensure that access to another equivalent or higher-level service does not take more than 60 minutes; and Multipurpose ERs, which represent the most advanced level of care and are usually located in central hospitals or hospital centers, equipped with all the necessary resources to deal with any urgent or emergency situation[2].

Efficient collaboration between different healthcare professionals and the appropriate organization of these services are essential to improve care and save lives. However, in recent years, a phenomenon of overcrowding in ERs has been observed, "mostly due to the excessive number of non-urgent" users[2:ix], which "demonstrates the inability of local services"[2:2] to respond adequately. The convenience for users of 24-hour access to a healthcare service and the ease of performing tests and obtaining therapy[4] are factors that attract users.

The inappropriate use of ER to resolve non-urgent situations is a universal phenomenon[2] that consumes an excessive number of human and financial resources[1]. According to the Organization for Economic Cooperation and Development (OECD), in 2021, Portugal was the country with the highest rate of ER admissions, with 63 admissions per 100 inhabitants, which is significantly higher than the OECD average of 27 admissions[5]. According to data from the National Institute of Statistics, in 2021, 6.5 million consultations were carried out in hospital ERs, corresponding to 14.3% more than in 2020. In 2021, 80.2% of consultations were carried out in public hospitals, with general emergencies (74.7%) and pediatric emergencies (19.2%) predominating[6].

It is essential to distinguish between users who seek emergency care for non-urgent episodes and those who make excessive visits to these services[7] in a given period of time. These individuals, although small in number, constitute the population responsible for a significant percentage of total emergency episodes[8-9]. These individuals are known as frequent users, and are also referred to as hyperusers[10].

Despite the diversity and lack of consensus in the definition of "frequent user", the present study considered, taking into account the number of recorded episodes, the threshold of four or more annual visits, in line with part of the most recent national[1,11] and international[9,12-14] literature. However, it is important to mention that the different definitions that exist make it difficult to compare studies and different realities. According to the literature, frequent users are responsible for approximately 14.6% to 47% of emergency episodes[15].

Defining the characteristics of frequent users is a challenge because, despite the apparent heterogeneity and complexity of this population, their understanding is contextual, which makes it difficult to generalize the data[9]. Cross-sectional studies conducted around

the world on the profile of these users indicate that sociodemographic and clinical factors influence the frequency of emergency episodes[13,16-17].

The main objective of this study is to analyze the profile of frequent users of a multipurpose ER in the autonomous region of the Azores, Portugal, relating sociodemographic, clinical and time characteristics. The aim is to understand whether certain conditions of vulnerability predispose to the abusive use ERs. Understanding and resolving the phenomenon of overcrowding are crucial to developing personalized interventions, mitigating influx and ensuring an improvement in the quality of healthcare provision in emergency settings.

METHOD

This is a retrospective study with a quantitative approach, carried out through the analysis of data related to the use of a Multipurpose Emergency Care Unit in the Autonomous Region of the Azores, Portugal, which is part of the third level of care and represents the most advanced response to urgent and emergency situations. The target population consists of all users (infants, children, adults and older adults) with four or more visits to the ER between January 1 and December 31, 2022. In the analyzed dataset, no incomplete records were identified, and it was not necessary to exclude or impute data.

The data used were obtained in October 2023, from an instrument structured by the researchers. Two different databases were analyzed: one provided by the management support IT service, in Excel® format, with information regarding all emergency episodes that occurred during the period under study; and the other structured using the consultation of users' electronic process, contained in the integrated hospital information system Glintt Healthcare®, platform used for the management of clinical and administrative data in health units, allowing access to user history, integrating information on consultations, emergency episodes, examinations and therapy, having analyzed the information provided by the multiple episodes of each visit to the ER.

The selection of the variables under study was carried out after an in-depth bibliographic review on the subject, since defining the profile of the frequent ER user implies identifying and quantifying different individual, social, economic and clinical characteristics of users. For this purpose, individual administrative data were collected regarding gender and age, time, day and month of admission, municipality of residence, payment or not of co-payments, origin, means of transport used and existence or not of a family doctor. Information was also collected regarding the number of medications, hospitalizations, average number of days of hospitalization, degree of dependence for activities of daily living, comorbidities, priority color and destination after discharge from the ER.

The analysis of the collected data was organized in Excel® version 2016, according to the objectives defined for this research work, with descriptive statistical analysis being carried out.

To ensure compliance with ethical principles and regulatory standards currently in force, the study was authorized by the Ethics Committee of the Hospital do Divino Espírito Santo, EPER, and the request for authorization was registered internally with judgment 1403/CES-HDESPD/2023, approved on September 14, 2023. Throughout the

investigation, the ethical provisions inherent to this type of study were complied with, guaranteeing the anonymity and confidentiality inherent in the use of administrative databases.

RESULTS

In the Multipurpose ER, during 2022, 55,392 users were admitted, accounting for 108,859 emergency episodes. Of this number, 6,553 (11.8%) were identified as frequent users, responsible for 37,151 (34.1%) of all admissions, with an average of 5.7 annual visits. The average age of the frequent user was 34.3 years, with the minimum age considered to be zero years and the maximum age to be 100 years. The age that appeared most frequently was zero years. The user with the highest number of visits to ER had 71 emergency episodes in a single year. Table 1 provides more detailed information on the sociodemographic description of the episodes.

Table 1. Sociodemographic description of episodes in 2022. Ponta Delgada, RAA, Portugal, 2023 (continue)

Variable	Levels	n	%
Sex	Female	20,74	55.8
	Male	16,411	44.2
Age group	0 - 17 years	12,298	33.1
	18 - 30 years	6,255	16.8
	31 - 45 years	5,792	15.6
	46 - 55 years	3,351	9.0
	56 - 65 years	3,137	8.4
	Over 65 years	6,318	17.0
Marital status	Married/common-law marriage	13,162	35.4
	Divorced	1,683	4.5
	Single	20,3	54.6
	Widowed	1,096	3.0
	No information	910	2.5
Municipality	Ponta Delgada	22,414	60.3
	Ribeira Grande	7,644	20.6
	Lagoa	4,801	12.9
	Vila Franca do Campo	1,283	3.5
	Povoação	471	1.3
	Nordeste	335	0.9
	Others	203	0.5
Family physician	Yes	16,407	44.2
	No	6,285	16.9
	No data	14,459	38.9
Moderation fee	Exempt	18,339	49.4
	Not exempt	18,807	50.6
	No data	5	0
Origin	Primary healthcare	1,01	2.7
	Nursing Homes	53	0.2
	Attending physician	39	0.1
	Overseas	36,046	97
	Others	3	0

Table 1. Sociodemographic description of episodes in 2022. Ponta Delgada, RAA, Portugal, 2023

(conclusion)

Variable	Levels	n	%
Means of transportation	Own resources	30,62	82.4
	Ambulance	6,209	16.7
	Ambulance/Immediate Life Support	319	0.9
	Plane	3	0

Source: The authors (2023).

The majority of recorded episodes are female users (55.8%), and around 49.9% are between zero and 30 years old. According to the data analyzed, the majority of the number of episodes concerns users living in the municipality of Ponta Delgada, and the minority, users from the municipality of Nordeste, and the other level refers to municipalities in other parts of the country. Concerning the origin, it was found that 97% of episodes originated abroad, i.e., users go directly to the ER without any prior contact with primary healthcare, and only 3% of users go to the ER upon recommendation from a healthcare professional. Regarding the means of transport, it was observed that 16.7% of episodes produced arrive by ambulance, and 82.4% go by their own means. The remaining users (0.9%) went to the ER via Immediate Life Support or by plane.

From the perspective of analyzing the clinical description of episodes (Table 2), it was found that 67% of frequent users had at least one comorbidity, with an average of two pathologies for each frequent user. Cardiovascular and psychiatric pathologies were highly prevalent among these users, with 1,723 cases of cardiovascular diseases and 1,628 cases of mental disorders diagnosed.

Table 2. Clinical description of episodes in 2022. Ponta Delgada, RAA, Portugal, 2023

(continue)

Variable	Levels	n	%
Priority	Emergent	107	0.3
	Very urgent	3,178	8.6
	Urgent	13,674	36.8
	Slightly urgent	18,151	48.9
	Not urgent	398	1.1
	No reason for urgency	1,643	4.4
Degree of dependence	Dependent	3,65	9.8
	Independent	31,213	84.0
	Semi-dependent	2,288	6.2
Number of comorbidities	0	12,348	33.2
	1-2	13,951	37.6
	3-4	5,35	14.4
	5-6	3,241	8.7
	> 6	2,261	6.1
Number of medications	0	15,909	42.8
	1-3	9,236	24.9
	4-6	4,763	12.8
	7-9	3,29	8.9
	> 9	3,953	10.6

Table 2. Clinical description of episodes in 2022. Ponta Delgada, RAA, Portugal, 2023

(conclusion)

Variable	Levels	n	%
Destination after discharge	Abandonment/discharge on request	1,896	5.1
	Outpatient consultation	1,79	4.8
	Home	27,451	73.9
	Deceased	30	0.1
	Hospitalizations	3,212	8.6
	Primary Healthcare	2,706	7.3
	Other	66	0.2

Source: the authors (2023).

Concerning regular medication, it was observed that these users use an average of around three drugs. Of the total of 37,151 episodes generated by frequent users, it was found that 8.6% resulted in hospitalizations, with an average of 5.3 days per hospitalization episode. The age group "over 65 years old" was responsible for 1,681 (52%) of hospitalizations generated by frequent users in 2022.

In relation to the absolute and relative distribution of emergency episodes by priority of care, it was found that the "not very urgent" and "non-urgent" priorities corresponded to 18,549 (50%) of total admissions generated by frequent users. The age group of "over 65 years" represents 38.5% of the total "very urgent" priorities and 23.9% of "urgent" priorities.

When analyzing the distribution of episodes, from the perspective of months, days and hours, it was identified that the admissions of frequent users are not uniform throughout the months, days of the week or hours of the day (Table 3).

Based on the data presented, it is worth noting that no significant variations were identified in the monthly distribution of episodes that would indicate a marked seasonality throughout the year, although it is noted that February was the month with the lowest demand for this user profile (6.6%). In contrast, May was the month that recorded the highest number of episodes (9.6%).

Data analysis shows that Monday was the day with the highest demand for emergency care (15.8%), with a gradual decrease observed throughout the week and the lowest volume of episodes during the weekend. Regarding the time of admission to the ER, data analysis allowed us to assess the existence of a peak in demand during the period from 8:00 to 12:00. It is clear that the period from 08:00 to 16:00 comprises the majority of episodes generated by frequent users (52.8%).

The results presented constitute the primary basis for the construction of a substantial and in-depth discussion about the observed phenomena. The intrinsic relationship between the results and the discussion is fundamental to understand, not only what was observed, but also to explore the reason for identified patterns.

Table 3. Distribution of episodes by months, days and hours in 2022. Ponta Delgada, RAA, Portugal, 2023

Variable	Levels	n	%
Month	January	2,713	7.3
	February	2,435	6.6
	March	2,971	8.0
	April	3,43	9.2
	May	3,582	9.6
	June	3,028	8.2
	July	2,916	7.8
	August	2,999	8.1
	September	3,11	8.4
	October	3,336	9.0
	November	3,498	9.4
	December	3,133	8.4
Day of the week	Monday	5,882	15.8
	Tuesday	5,819	15.7
	Wednesday	5,458	14.7
	Thursday	5,598	15.1
	Friday	5,336	14.4
	Saturday	4,663	12.6
	Sunday	4,395	11.8
Time interval	From 00:00 to 04:00	1,802	4.9
	From 04:00 to 08:00	1,661	4.5
	From 8:00 to 12:00	10,722	28.9
	From 12:00 to 16:00	8,871	23.9
	From 16:00 to 20:00	8,479	22.8
	From 20:00 to 24:00	5,616	15.1

Source: the authors (2023).

DISCUSSION

The data collected reveal some patterns, providing fundamental insights into the interaction that exists between specific variables and the observed phenomenon. The results obtained will now be explored, aiming to contextualize them within the current scientific overview, highlighting similarities, differences and contributions of this study to the broad understanding of the phenomenon.

Similar to studies carried out in several countries, a significant proportion of frequent users was observed (11.8%), exceeding the national average for the same period (4%)[18]. Most studies in an international context[12-14,17] reveal lower prevalence rates, however a study carried out in Canada[19] presents a higher rate (13.8%-15.3%). This disparity may reflect not only variations in the target populations, but also a bias resulting from the lack of a consensual definition for "frequent users".

The presence of a high prevalence of pediatric users appears to contradict the demographic profile of other studies[1,13,17,20-21]. Despite the evolution of demographic indicators, recent decades have shown that Portugal is following a trend of progressive aging, and the island of São Miguel counters this dynamic by presenting favorable

indicators. Specifically in the 2021 census, a more balanced proportion between young and old people is observed, with a ratio of 93 older adults for every 100 young people, in clear contrast to the 183 older adults for every 100 young people living in the country[22]. Concerning the difference between genders, the analysis of the data reveals that females are responsible for more than 10.6% of the episodes compared to males, data that are in line with other published work[13,19,17,23].

The geographic proximity between the frequent user's home and the emergency unit plays a key role in accessibility and decision-making related to seeking this type of healthcare. A cross-sectional study conducted at the Lausanne Hospital in Switzerland[24] concluded that users living closest to the ER are 4.4 times more likely to be frequent users than those living further away.

In the context of the present study, some patterns were observed. It was found that the geographical areas closest to the hospital unit (municipalities of Ponta Delgada, Lagoa and Ribeira Grande) recorded the highest number of episodes of use, a phenomenon also observed in the context of other studies[9,13.] This association can be partially explained by the fact that these geographic areas have a higher population density. However, when calculating the rate of use of the ER per 100 inhabitants, it is clear that the municipalities of Lagoa and Ponta Delgada present figures that stand out from the other municipalities, with 34 and 33 episodes per 100 inhabitants, respectively, a circumstance that may be related to possible challenges in terms of access to primary healthcare, as these municipalities do not have basic emergency units and the waiting list for scheduled appointments is considerable. This data, contrary to conventional expectations, suggests that demand for emergency care in these areas is not only driven by physical proximity, but also by other factors, such as accessibility to healthcare.

An important piece of information in understanding patterns of seeking healthcare arises when we address existing comorbidities. Many studies identify that a significant component of this dynamic is the existence of pre-existing health conditions, which directly impact the frequency and nature of interactions with ERs.[1,17,21]. The results of this research are in line with the findings of previously mentioned studies[1,17,21], demonstrating that the majority of the population studied has pre-existing medical conditions. Moreover, it is observed that the use of medications among users is frequent, although in smaller quantities compared to the study carried out in Castelo Branco[1].

Priority of care is a variable that is important to discuss, as it allows us to understand the dynamics of frequent users of the ER. Data analysis reveals that the majority of frequent users (53.9%) were classified as having a priority of little urgency, non-urgent or with no apparent reason for urgency, a fact corroborated by some of the literature analyzed.[13,20,25]. This pattern suggests a dynamic in which the demand for emergency care is not aligned with the immediate severity of the emergency episode. Understanding this discordance is fundamental to building effective approaches within society to manage the demand for emergency care.

Considering that hospitalizations often reflect the severity and urgency of episodes, the number observed in this study, although relevant, can be interpreted in several ways, since other studies report higher values[26-27]. This information may indicate a higher prevalence of non-urgent episodes, indicating that ERs are used for cases that could be managed in other health contexts. On the other hand, it may be related to systemic factors, such as the response capacity of healthcare services, or specific characteristics of the local context.

Analyzing the specific moment of admission, including the month, day and time, becomes relevant, as this temporal analysis provides insights into patterns of seeking

care in an emergency context. By considering the moment of admission, it is possible to identify seasonal trends, more critical days of the week and peak hours, enriching the understanding of the factors that influence the use of the ER by this population.

The number of visits made throughout the year shows a small variation of 3% between the month with the highest and lowest demand. Frequent users used the ER more during May, and February was the month with the lowest demand, which may be explained by the fact that this month has fewer days than the other months of the year.

Monday was the day of the week with the highest demand, with a decrease in episodes throughout the week, with the weekend showing the lowest number of episodes, data that are in line with the results obtained in other studies[20,28]. It is believed that the greater demand for care on Monday is due to the reduced availability of healthcare services during the weekend, which results in the clustering of episodes in the ER on Monday, of users who were affected by health problems during Saturday and Sunday.

In relation to the time of admission, in this study, there was a greater influx in the period from 8:00 to 12:00, followed by the period from 12:00 to16:00. Results of some studies indicate the daytime as the most frequent period[20,23,28]. Frequent users' preference for daytime hours may be attributed to several factors; for example, during daytime hours, the ER operates at a more comprehensive capacity, both in terms of availability of healthcare professionals and in terms of complementary diagnostic tests and other essential resources available. It is important to consider that the preference for daytime hours may also be due to logistical factors, such as the availability of transportation and convenience for the users themselves.

It is essential to recognize the limitations inherent to this study, which are essentially related to the methodology adopted. As this is a retrospective study, in which information was obtained through the analysis of clinical processes, the investigation is subject to restrictions on the level of data that the health team records in each user's unique process, noting that this is not yet standardized among professionals, which may generate biases in terms of the quality and quantity of the data subject to analysis.

The retrospective nature of this study also limited the ability to detect events in real time, as well as to obtain additional information on variables that are not included in records, such as the level of education, employment status and monthly income of each user. These considerations highlight the importance of interpreting the results with some caution, and encourage the exploration of complementary or prospective approaches to obtain more comprehensive data in the future.

FINAL CONSIDERATIONS

Within the scope of the present study, a significant number of frequent users were identified, resulting in a significant proportion of emergency episodes generated. Most of these admissions were associated with situations classified as low-urgent or non-urgent, with a low rate of hospitalizations and occurring mostly during the daytime. This pattern suggests that many of these episodes did not require urgent care and could have been assesed in more appropriate contexts, such as primary healthcare.

This reality can be interpreted as a manifestation of inadequate use of ERs, reflecting gaps in accessibility and inefficiencies in the coordination of the healthcare network.

This observation emphasizes the importance of introducing strategies aimed at optimizing the management of these cases, promoting effective and efficient use of the ERs and redirecting users to the appropriate care units according to the severity and nature of each situation. This is not intended to limit access to healthcare, but rather to direct them to more appropriate care, mitigating the overload of ERs and ensuring a more qualified response.

The need to implement intervention measures and strategies, both at national and regional or local levels, is urgent. The creation of an intervention model, such as the case manager for chronic, complex and multimorbid users, as well as the establishment of Local Health Units that articulate primary healthcare with hospital care, can represent an effective approach to solving the problem of frequent users of ERs, contributing to cost reduction and improving quality of care.

Finally, it is considered that, for the purposes of conducting studies such as this, it would be beneficial to expand the size of the population studied and include a control group composed of occasional users. This change would allow a more robust definition of the characteristics of frequent users, providing a more comprehensive and comparative understanding between these two groups of users. By including a control group of occasional users, it would be possible to draw parallels and identify distinct patterns between those that influence the frequency of use of ERs.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **de Medeiros AT, Picanço JLS;** Drafting the work or revising it critically for important intellectual content - **de Medeiros AT, Picanço JLS, Araújo NMF;** Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **de Medeiros AT, Picanço JLS, Araújo NMF.** All authors approved the final version of the text.

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