"Call First, Save Lives": Implementation of Telephone Pre-Triage at the Local Health Unit of Braga and Future Perspectives for Access to the Emergency Department in Portugal

"Ligue Antes, Salve Vidas": Implementação da Pré-Triagem Telefónica na Unidade Local de Saúde de Braga e Perspetivas de Futuro para o Acesso ao Serviço de Urgência em Portugal

Sílvia Raquel Santos*[1,2], Inês Gonçalves Mamede*[1], Joana Carlos Alves[3]

Abstract:

Introduction: Emergency Department (ED) overcrowding and inadequate use are widespread challenges. Telephone triages (TTs) are among the most studied solutions. The Portuguese "Call First, Save Lives" (CFSL) innovative project implemented a pre-hospital telephone triage (SNS24) to optimize patient referral pathways (RPs). This study provides the first patient-centered integrated evaluation of its implementation at the Local Health Unit of Braga (LHUB).

Methods: A questionnaire was applied to a convenience sample of 128 adult patients attending the LHUB Emergency Department (July-September 2025), assessing sociodemographic characteristics, referral pathways and patient satisfaction. Clinical data and ED-episode outcomes were extracted from health records.

Results: A clear gap between the project's awareness (93.8%) and actual SNS24-referrals (24.2%) was found. Self-referral predominated (56.3%). Most patients (58.6%) did not contact the line, mentioning perceived urgency, undesirable operational barriers (such as excessive waits and unanswered calls) or simply not considering it. Understanding of the "Call First, Save Lives" benefits was limited, and satisfaction was low (2.98/5) and significantly associated with the RP (p=0.004).

Primary care services (PCS) were largely bypassed, despite high Family Physician coverage (89.8%) and satisfaction (80.9%).

Referral pathways did not influence waiting time or triage category. Older age was a significant predictor of not contacting (p=0.016) nor being referred by SNS24 (p=0.043).

Conclusion: The "Call First, Save Lives" project at the Local Health Unit of Braga still faces significant implementation challenges. Self-referral persists within a saturated system, where "calling first" has yet to demonstrate measurable impacts. Misconceptions about telephone triages and primary care service, along with limited health literacy, sustain direct ED access. These findings underscore the need to optimize SNS24 performance, triage algorithms and patient engagement.

Keywords: Crowding; Emergency Medicine/methods; Emergency Service, Hospital; Hotlines; Patient Satisfaction; Primary Health Care; Telephone; Triage.

Resumo:

Introdução: A sobrelotação e uso inadequado do Serviço de Urgência (SU) é um desafio generalizado. As triagens telefónicas (TTs) encontram-se entre as soluções mais estudadas. O projeto inovador português "Ligue Antes, Salve Vidas" (LASV) implementou uma triagem telefónica pré-hospitalar (SNS24) para otimizar as vias de referenciação (VRs) dos pacientes. Este estudo constitui a primeira avaliação integrada e centrada no doente da sua implementação na Unidade Local de Saúde de Braga (ULSB).

Métodos: Foi aplicado um questionário a uma amostra de conveniência de 128 doentes adultos que recorreram ao Serviço de Urgência da ULSB (julho-setembro 2025), avaliando características sociodemográficas, vias de referenciação e satisfação dos doentes. Dados clínicos e resultados do episódio do Serviço de Urgência foram extraídos dos processos clínicos.

Resultados: Verificou-se um claro desfasamento entre o conhecimento do projeto (93,8%) e a referenciação efetiva via SNS24 (24,2%). A autorreferenciação predominou (56,3%). A maioria dos doentes (58,6%) não contactou a linha, mencionando auto-perceção de urgência, barreiras operacionais indesejáveis (como espera excessiva e chamadas não atendidas) ou simplesmente não ter considerado esta opção. A compreensão dos benefícios do "Ligue Antes, Salve Vidas" revelou-se limitada e a satisfação foi baixa (2,98/5), associando-se significativamente à VR (p=0,004).

Os Cuidados de Saúde Primários (CSP) foram largamente contornados, apesar da elevada cobertura por um Médico de Família (89,8%) e satisfação (80,8%).

* Co-first authors/Co-primeiros autores
[1]Escola de Medicina da Universidade do Minho, Braga, Portugal
[2]Serviço de Patologia Clínica na Unidade Local de Saúde de Braga, Braga, Portugal
[3]Serviço de Urgência da Unidade Local de Saúde de Braga, Braga, Portugal

https://doi.org/10.24950/rspmi.2835

A via de referenciação não influenciou significativamente o tempo de espera nem categoria de triagem. A idade avançada foi preditor significativo da ausência de contacto (*p*=0,016) e referenciação pelo SNS24 (*p*=0,043).

Conclusão: O projeto "Ligue Antes, Salve Vidas" na ULSB enfrenta desafios de implementação significativos. A autorreferenciação persiste num sistema saturado, onde "ligar antes" ainda não demonstrou impacto mensurável. Conceções erradas sobre triagens telefónicas e Cuidados de Saúde Primários, a par da limitada literacia em saúde, sustentam o recurso direto ao SU. Estes resultados sublinham a necessidade de otimizar o desempenho do SNS24, algoritmos de triagem e envolvimento dos utentes.

Palavras-chave: Aglomeração; Cuidados de Saúde Primários; Linhas Diretas; Medicina de Emergência/métodos; Satisfação do Doente; Serviço de Urgência Hospitalar; Telefone; Triagem.

Introduction

The use of Emergency Departments (EDs) for non-urgent conditions represents a critical challenge for modern healthcare systems. Over the past decade, ED visits, including "inappropriate" ones, increased consistently across most Organization for Economic Co-operation and Development (OECD) countries, reaching an average of 31 visits per 100 population in 2011.[1]

Portugal reports the highest per capita Emergency Department use among OECD countries, with over 70 visits per 100 population in 2011,[1] corroborated by a recent average of 6 million annual attendances in public hospital EDs (2013-2023).[2] A significant proportion of low-severity patients continues to self-refer to EDs, which unnecessarily consumes and misallocates resources, increases costs and workload, elevates the risk of adverse outcomes and reduces patient satisfaction, compromising care efficiency and quality.[1,3-5]

To address inappropriate Emergency Department utilization, improve patient flow and the National Health Service (NHS) responsiveness, the Portuguese NHS Executive Directorate supported by the Ministry of Health' Shared Services, launched the "Call First, Save Lives" (CFSL) pilot project in May 2023.[6] This initiative builds on the existing telephone line, SNS24 (previously used for general health advice), to implement a compulsory pre-hospital telephone triage system (TTS) for acute conditions. Patients are assessed by the SNS24 Contact Center and directed to the most appropriate care level: Emergency Department, Primary Care Services (PCS), or self-care, based on clinical severity. The "Call First, Save Lives" aims to promote more appropriate National Health Service use and patient referral, avoiding unnecessary travel, time loss, and ED overcrowding, ultimately improving health outcomes.[2,6]

While research suggests telephone triage systems may reduce clinical and administrative burdens and inappropriate ED use,[7] data on the most clinically or cost-effective model is limited. Preliminary evaluations of this new referral model were highly favorable,[8] showing increased referrals to PCS. Therefore, the project was expanded in January 2024, including the Local Health Unit (LHU) of Braga (LHUB).[8] Given the "Call First, Save Lives" recent implementation, systematic scientific evaluation and published data remain limited.

Thus, this study addresses a critical gap in both national and international literature. Considering the persistent challenge of Emergency Department overcrowding and the development of a potentially effective strategy to reorganize emergency care (EC) and optimize resource allocation, we present the first integrated evaluation of "Call First, Save Lives" implementation at the Local Health Unit of Braga. This analysis assesses the impact of this new ED access model, coordination between levels of care, and user experiences, offering, for the first time, a patient-centered perspective. Ultimately, the findings may provide valuable insights into future emergency care access policies.

Material and Methods

This cross-sectional study involved the application of a questionnaire to patients about their Emergency Department access experience, followed by an Electronic Health Record (EHR) retrospective review for ED visit outcomes and follow-up information.

The study population included adult patients admitted to the Local Health Unit of Braga Emergency Department from July to September 2025. Patients admitted to the LHUB Gynecology/Obstetrics and Pediatric ED, triaged as White or Red priority level by the Manchester Triage System (MTS) or unable to provide and understand Informed Consent (IC) were excluded.

1. DATA COLLECTION

Given the absence of a validated instrument specifically addressing the "Call First, Save Lives" implementation, a questionnaire was developed for this purpose following best practices of content and face validity.[9]

Initially, questionnaire items were designed based on a literature review on ED access, telephone triage systems and service evaluation,[10-17] complemented by the research team's clinical experience.

Subsequently, a panel of 3 experts in Internal Medicine (including the Local Health Unit of Braga Emergency Department Director) and Family Medicine, assessed its clarity, relevance, and appropriateness.

Finally, a pilot test with 20 participants, representative of the target population but excluded from the final sample, was conducted to identify necessary adjustments to comprehensibility, completion time, and functionality, yielding the final version for data collection.

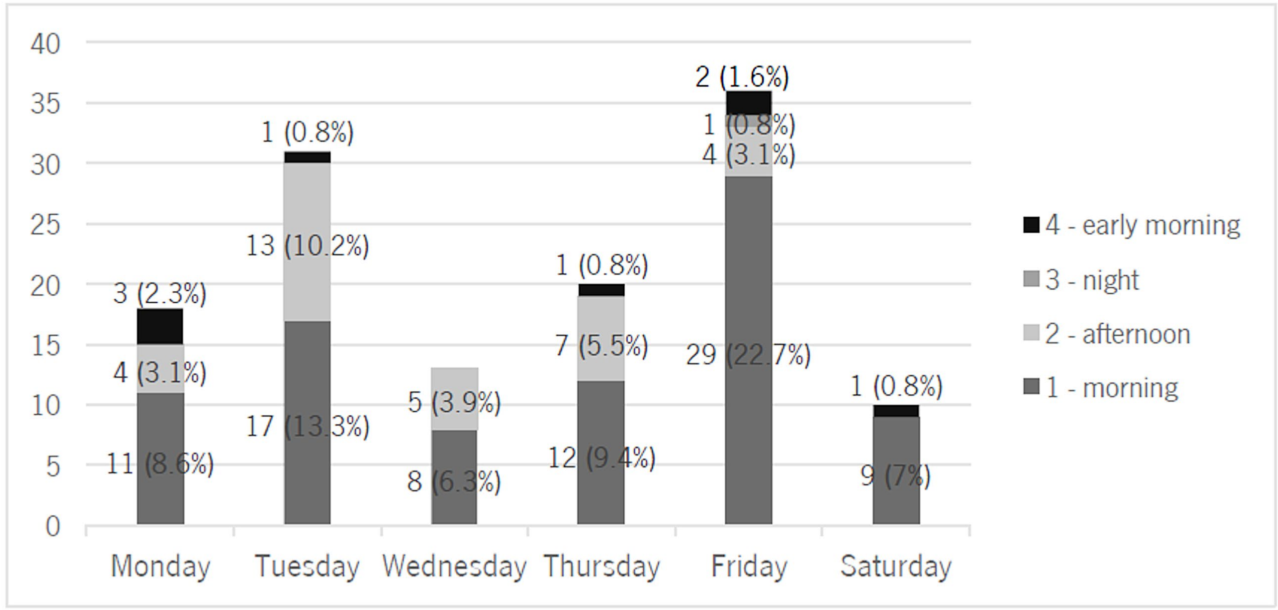

Figure 1: Patterns of participant recruitment in the LHUB ED by day of the week and time of the day.
This bar chart illustrates the distribution of participant recruitment by day of the week and time periods: early morning (00:00-6:59), morning (7:00-11:59), evening (12:00-19:59) and night (20:00-23:59), rather than overall ED attendance patterns.

A convenience sample was recruited in the Local Health Unit of Braga Emergency Department. Data collection was carried out on alternating weekdays and at different times of the day, depending on operational feasibility, in an attempt to minimize selection bias and capture a heterogeneous patient cohort, considering the inherent unpredictability and workflow variability of the emergency department.

Participant recruitment was more frequent on Fridays and in the mornings (Fig. 1).

After triage, eligible patients in the waiting room were invited to participate in the study by the Principal Investigator (PI), when clinically appropriate. Written Informed Consent was obtained, including options to/not to complete the questionnaire and authorize EHRs' access.

Instrument development and data collection workflow are summarized in Fig. 2.

2. STATISTICAL ANALYSIS

For the questionnaire's pilot test, 20 participants were recruited, considering recommendations of 15-30 subjects to adequately assess the feasibility, clarity, and acceptability of survey instruments.[18]

IBM SPSS Statistics 29.0® for Windows® was used for statistical analysis, assuming a significance (*p*-value) <0.05 with a 95% confidence interval (CI).

Differences between continuous variables were analyzed using Student's independent samples t-test. When normality was not met, the Mann-Whitney U test was used.[19] Categorical variables were examined using Pearson's Chi-square (χ^2) or Fisher's exact test if assumptions were not met.[20,21]

Binary logistic regression (BLR) models were built to identify predictors of SNS24 referral and contact. The recommended minimum of ten events per predictor variable was followed[22] which restricted our model to a maximum of four predictors.

3. ETHICAL CONSIDERATIONS

The study was approved by the University of Minho and the Local Health Unit of Braga Ethics Committees, and the Data Protection Officer posing no risk or cost to patients or institutions. Investigators guaranteed confidentiality, data integrity and exclusive use for research purposes.

Results

The final sample included 128 eligible participants. Two profiles were considered: questionnaire respondents (patients or caregivers if the patient is unable to self-report) and patients (subjects of the study, admitted to the Emergency Department). Women predominated in both groups, participants and patients, with mean ages of 49.9±14.0 and 54.7±17.6 years, respectively. Most were Portuguese, employed and independent in daily activities. Secondary education predominated among participants and elementary education among the broader ED population. Over 53.1% of patients were exempt from co-payments and 64.1% lacked health insurance.

Health conditions were self-perceived as urgent (52;40.6%) or very urgent (43;33.6%), despite lower-severity official triages, mainly "Urgent" (66;51.6%) and "Less urgent" (59;46.1%) on MTS. "Limb problems" predominated among

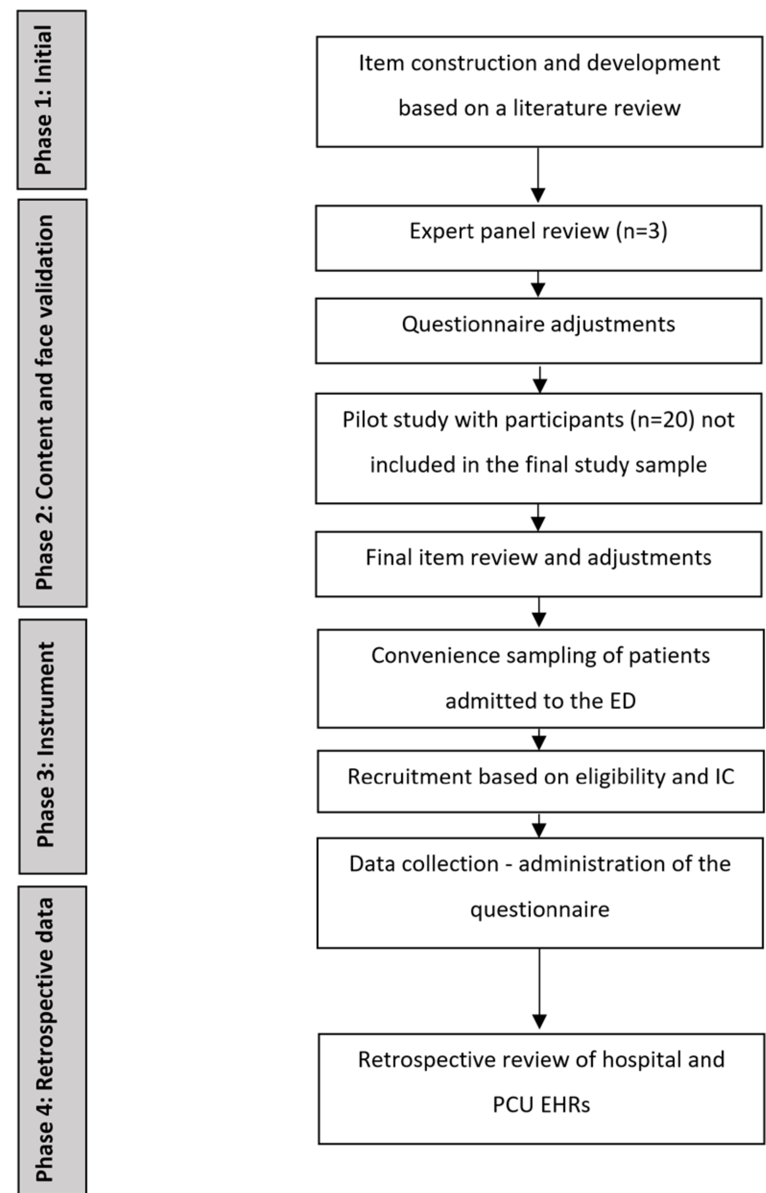

Figure 2: Flowchart of the instrument development and data collection process.

admission flowcharts assigned after triage assessment. Most patients (64;50.1%) visited the ED within three days of symptom onset and were discharged home (77;60.2%).

Fig. 3 shows primary RPs. 72 (56.3%) patients attended the Emergency Department without prior referral from any authorized source. SNS24 was the second source, accounting for 31 visits (24.2%).

Eighty (62.5%) patients sought no prior healthcare service (HS). Among the remaining 48 (37.5%), acute care consultation was the most frequent choice (25;19.5%).

General private Emergency Department (Table 1) use (45;35.2%) was not frequently reported. Main barriers were financial (44;34.4%), lack of insurance (33;25.8%) and less often, no perceived need (26;20.3%).

Awareness of the acute care consultation was widespread (108;84.4%) and frequently used (80;74.1%). No recent need (12;41.4%), access barriers (8;27.6%), perceived severity and preference for ED resources (4;13.8%) were common reasons for not using ACC.

While correctly identified as a service for acute conditions requiring same-day attention (68.8%), misconceptions and inappropriate use emerged, with 14.8% reaching the ACC when unable to get a scheduled appointment for a non-acute issue with their Family Doctor (FD). Eleven (8.6%) participants believed that ACC access was only possible through prior SNS24 referral.

Regarding patient-provider relationship, only 13 (10.2%) had no assigned Family Doctor, with 93 (80.9%) reporting high satisfaction levels (4 and 5 on a 1-5 scale).

Finally, when asked about their intended first step once facing a non-emergent health problem, participants clearly preferred primary care services (52;40.7%), while others

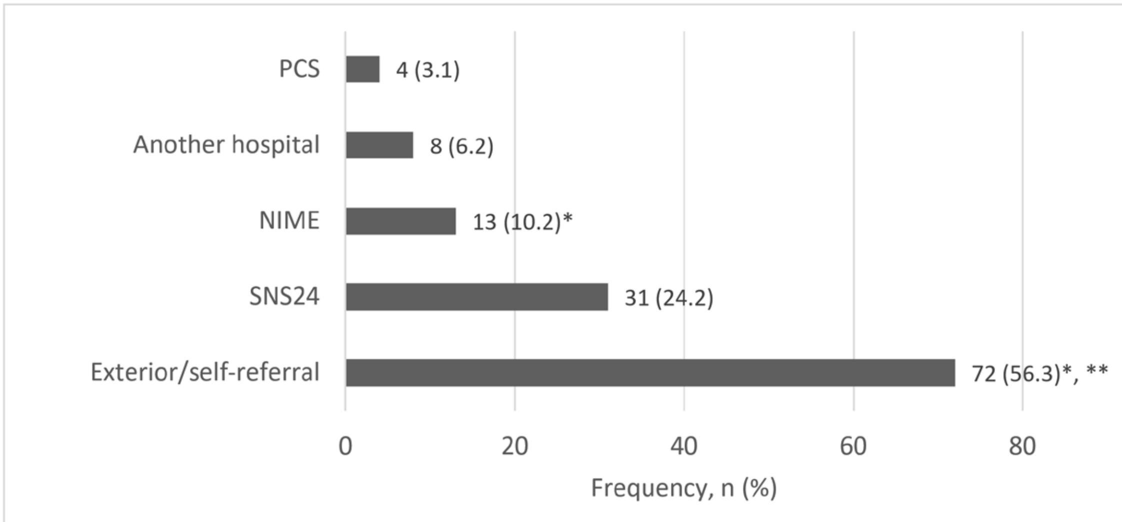

Figure 3: Distribution of primary Referral Sources to the ED.
Inconsistencies were detected between the referral source reported on the questionnaire and the official one determined by triage and documented in the EHR. This graphic represents the official triage classification, as this determined outcomes evaluated in this study such as priority in care, waiting time and outcomes of the ED episode.
* Four participants selected SNS24 referral, however there was no documented SNS24 contact in clinical files and triage classified them as self-referrals (n=2) or referrals from NIME (n=2). Another patient officially referred by SNS24 to PCS chose to go directly to the ED, but still reported the SNS24 as the RP, while the triage team classified it as "Exterior".
** Some cases were triaged as "Exterior" arrivals, although clinical records and questionnaire responses confirmed contact with the SNS24 helpline (n=2) and despite presentation of a formal referral letter from another institution (n=2).
Finally, retrospective follow-up could not be completed for one participant who had passed away.

Table 1: Prior healthcare utilization among patients presenting to the ED.

Which of the following HSs did you seek before coming to this ED for the current complaint?* (MAQ), n (%)	N=138
None	80 (62.5)
ACC at the PCU	25 (19.5)
Consultation at a private hospital or clinic	13 (10.2)
Scheduled appointment at the PCU	9 (7.0)
ED at another public hospital	7 (5.5)
ED at a private hospital or clinic	4 (3.1)
Number of services, n (%)	**N=128**
0	80 (62.5)
1	41 (32.0)
2	4 (3.1)
3	3 (2.3)

*(MAQ) - Participants could select more than one option. Percentages are based on the total number of answers.

chose watchful waiting (10;7.8%) or self-management strategies (17;13.3%). Notably, 8.6% would still go directly to a public ED.

Awareness of the "Call First, Save Lives" project was widespread (120;93.8%), mainly through mass media (74;54.4%). Yet, the understanding of its objectives was limited. Most participants (71;57.3%) correctly identified its primary aim of directing patients to the appropriate care level. However, only 12.9% knew about the priority in observation it introduced; 18.5% were uncertain, and 9.7% did not recognize any of the proposed options as project goals.

Table 2 reveals that most participants (75;58.6%) did not attempt to contact SNS24. Among those who did, 81.2% successfully reached a professional, with a mean of 1.45±0.77 contact attempts and a median of 15-minute wait (IQR=25.0).

The main reasons for not contacting SNS24 were simply not considering it (23;24.0%), perceiving the situation as too urgent for a telephone consultation (16;16.7%) and concern about delaying ED arrival (9;9.4%). Several patients mentioned logistical barriers or lack of trust in the "Call First, Save Lives" system.

Thirteen (30.2%) saw no significant benefit in calling first, and 7 (16.3%) believed primary care services could have managed

Table 2: Characteristics of the SNS24 contact experience.

Did you try to contact the SNS24 telephone line? n (%)	N=128
Yes	53 (41.4)
No	75 (58.6)
How many times did you try to call the SNS24 line? Mean ± SD	N=53*
	1.45 ± 0.77
If you tried to contact SNS24, which option best describes your situation? n (%)	N=53*
I tried to call but the call was not answered	10 (18.9)
My call was answered	41 (77.4)
They called me back later	2 (3.8)
How long did you wait for your call to be answered/returned? (minutes), Median (IQR)	N=43**
	15.0 (25.0)
Who contacted the SNS24 line? n (%)	N=43**
The person filling out this questionnaire	38 (88.4)
Another person	5 (11.6)
When did you contact the SNS24 line? n (%)	N=43**
Before traveling to the ED	40 (93.0)
After having already traveled to the ED	3 (7.0)

*The total sample is n=53 because these questions were displayed only to participants who reported an answered call.
**The total sample is n=43 since these questions were only answered by participants who reported that their call was answered or subsequently returned by SNS24.

the problem. Despite these reservations, the likelihood of using SNS24 again in similar contexts was very positive.

Only 8 (12.5%) participants were unsure if they would be admitted to the ED without prior referral.

Overall perception of the "Call First, Save Lives" initiative was ambivalent, with a mean satisfaction score of 2.98 on a five-point scale (Fig. 4).

Qualitative analysis of open-ended responses (Table 3) revealed negative opinions centered on practical execution, broader National Health Service resource constraints and remote assessment limitations. Contrarily, several participants acknowledged its potential, describing it as effective and useful.

Key clinical outcomes and Emergency Department process metrics were compared across referral pathways (Table 4). SNS24-referred patients did not experience shorter waiting times, even when stratified by admission area (p=0.430; p=0.118). No associations were found between referral pathways and clinical severity (p=0.679) or patients' outcomes after the ED episode (p=0.306).

The new organizational model's impact was assessed by analyzing associations between referral pathway and sociodemographic/clinical variables. Mean age differed significantly across groups (F=5.36; p=0.006), with RPs accounting for 7.9% of the variance (η^2=0.079, medium effect). Patient

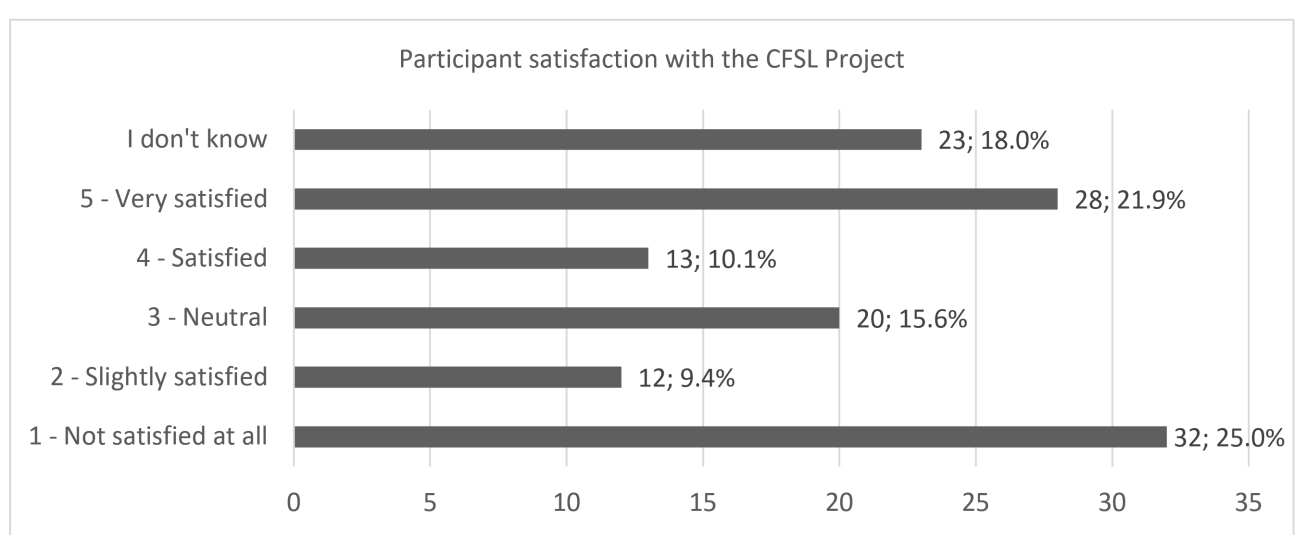

Figure 4: Participant satisfaction with the CFSL Project.
This bar chart illustrates the participants' answers to the question "On a scale of 1 to 5, please rate your satisfaction with the CFSL Project" (n; %). The total number of participants surveyed was 128, however, only 120 were familiar with the CFSL Project and thus provided valid opinions. Five participants expressed an opinion even without having used the TTS for the current or past episodes and 10 felt unable to rate the initiative despite being aware of the project.

Table 3: Qualitative analysis of open-ended responses regarding the opinion on the CFSL Project.

General opinion	Subtheme	Frequency, n (%)
Negative perceptions	Excessive waiting times for initial contact and call-backs; failure to answer/return calls	41 (33.6)
	Lack of perceived benefit and perceived SNS24' insufficient resources or ineffective referrals (always to PCS or redundantly to the ED)	8 (6.6)
	Patient challenges in understanding the questions asked by the staff/length of the questionnaire	5 (4.1)
	Accessibility barriers for older adults when using the telephone service	5 (4.1)
	Inappropriate for situations requiring urgent medical care	4 (3.3)
	Perception that the service acts as a barrier, limiting patient access to the ED	3 (2.5)
	Distrust in the reliability of remote assessment (compromises accuracy of clinical evaluations and appropriateness of the resulting triage decision)	2 (1.6)
	Lack of quality/inexperience of the staff	2 (1.6)
	Perception that the project unfairly assumes that all patients use the ED inappropriately	1 (0.8)
Positive perceptions	Effective, efficient and high-quality service	30 (24.6)
	Appreciation of the project's goals and innovation	2 (1.6)
Ambivalent perceptions	Acknowledgment of the service's intent, but criticism of its implementation (including the belief that telephone triage should be the standard procedure, except for medical emergencies)	19 (15.6)

This table provides a summary of the main topics mentioned in the responses to the question "What is your opinion on this project?" Each participant could mention more than one topic (n (%)); N=122.

Table 4: Comparison of ED metrics and Outcomes by RP.

Variable	SNS24	Self-referral	Other	Statistical test value	Sig. *p*	Effect size
Total waiting time (minutes), Median (IQR)	282.0 (259.0)	252.5 (209.5)	236.0 (231.5)	H = 1.689	0.430	ε^2=0.014
Time to first medical observation (minutes), Median (IQR)	59.0 (98.0)	65.5 (116.7)	36.5 (65.25)	H = 4.270	0.118	ε^2=0.034
Outcome following ED assessment, n (%)				Fisher's exact test = 12.655	0.306	ϕc=0.238
Voluntary withdrawal	0 (0.0)	7 (9.7)	1 (4.0)			
Discharge against medical advice	0 (0.0)	1 (1.4)	0 (0.0)			
Discharge home	23 (74.2)	40 (55.6)	14 (56.0)			
Discharge with FD follow-up	4 (12.9)	15 (20.8)	3 (12.0)			
Hospital admission	1 (3.2)	2 (2.8)	0 (0.0)			
External consultation	3 (9.7)	6 (8.3)	5 (20.0)			
Another public hospital	0 (0.0)	1 (1.4)	2 (8.0)			
Return to the ED within 7 days, n (%)				Fisher's exact test = 2.721	0.720	ϕc=0.105
Yes	2 (6.5)	9 (12.7)	1 (4.0)			
No	29 (93.5)	62 (87.3)	24 (96.0)			
MTS priority level, n (%)				Fisher's exact test = 4.345	0.679	ϕc=0.123
Blue – Non-urgent	0 (0.0)	1 (1.4)	0 (0.0)			
Green – Less urgent	17 (54.8)	33 (45.8)	9 (36.0)			
Yellow – Urgent	14 (45.2)	37 (51.4)	15 (60.0)			
Orange – Very Urgent	0 (0.0)	1 (1.4)	1 (4.0)			

*|Adjusted residuals (AR)|>1.96; **|AR|>2.58. "Other" includes referrals by PCS; NIME, private institutions or other healthcare professionals with written information. The influence of waiting time outliers was tested in a sensitivity analysis, by repeating the statistical tests excluding extreme values. As their presence did not affect the significance of the findings, the results from the full sample are presented. Sample sizes differed slightly across variables: n=127 for "Time to clinical assessment" (one patient left without being seen) and n=123 for "Total length of stay" (four additional withdrawals before discharge time was recorded). One patient's death resulted in a final n=127 for subsequent analyses.

Table 5: BLR predicting the likelihood of SNS24 referral (n=128).

Included Variables	Nagelkerke R square	ß	Sig. *p*	Exp (B)	95% CI
Age (years)	0.163	-0.033	0.043	0.968	0.938-0.999
Recent ED visit (past two weeks)		-1.351	0.089	0.259	0.055-1.230
Area of admission*		-1.104	0.032	0.332	0.121-0.910

*Area of admission was defined according to official triage records in two categories: medical area and surgical area.

satisfaction with the "Call First, Save Lives" project was also significantly associated with the referral pathway (p=0.004; ϕc=0.324, medium effect). No other significant associations were found.

To identify predictors of SNS24 referral (compared to the other RPs), a binary logistic regression was performed (Table 5). The final model was statistically significant ($\chi^2(3)$=14.744; p<0.002), explaining 16.3% of variance (Nagelkerke R^2) and exhibiting high specificity (94.8%) but low sensitivity (9.7%). Older age (odds ratio (OR)=0.968; p=0.043) and surgical area of admission (OR=0.332; p=0.032) were associated with lower odds of SNS24 referral.

The second binary logistic regression, predicting the likelihood of SNS24 contact, was statistically significant ($\chi^2(4)$=14.214; p=0.007), explained 14.2% (Nagelkerke R^2) of the variance in contact attempts and demonstrated good specificity (80.0%), but poor sensitivity (49.1%). Table 6 shows age was the only significant predictor (OR=0.966; p=0.016).

suggest that many cases might have been managed within primary care services. These findings reinforce crucial misconceptions about ED's role and strongly support telephone triage systems such as the SNS24, designed to redirect non-urgent cases to appropriate alternatives and address the concerning rate of ED self-referrals by low-severity patients.

In Switzerland and Australia, users changed their intention to visit the ED based on TTS nurse advice.[10,27] In fact, the "Call First, Save Lives" reduced non-referred episodes[2] and Emergency Department attendances across LHUs[2,8] (particularly in the Local Health Unit of Braga, visits declined from 126,049 in July 2024 to 116,279 in July 2025[28]). However, our data shows that core behaviors remain unchanged: 58% of patients self-presented, without referral. Previous reports also confirm self-referrals remain above 60% in most LHUs, except for the pilot municipality.[2]

Accordingly, a clear gap emerged between patients' intended and actual behavior. Despite only 8.6% preferring direct public ED attendance for a non-urgent issue, many did so when perceiving urgency. Eighty-seven point five percent were confident they would be seen without formal referral, demonstrating a perceived failure of gatekeeping.

Table 6: BLR predicting the likelihood of attempting to call SNS24 line (n=128).

Included Variables	Nagelkerke R square	ß	Sig. *p*	Exp (B)	95% CI
Age (years)	0.142	-0.035	0.016	0.966	0.939-0.994
Nationality		0.741	0.191	2.098	0.690-6.378
Recent ED visit (past two weeks)		-0.780	0.155	0.458	0.156-1.344
Area of admission*		-0.729	0.074	0.483	0.217-1.074

Discussion

This study provided the first "Call First, Save Lives" project evaluation at the Local Health Unit of Braga, alongside a retrospective review of operational metrics.

The sample was mainly middle-aged, professionally active (68%) and functionally independent (99%). Regarding clinical status, we found clear discrepancies between respondents perceived urgency (74.2% classified their condition as Urgent/Very Urgent) and their triage-assigned priorities (mostly Urgent/Less Urgent). This is consistent with 2025 national data[23] and represents a key contributor to Emergency Department overcrowding.[12,13,24,25]

In our sample, most patients reported symptoms within the past 3 days, reinforcing an immediacy culture and low tolerance for delay. Consistent with previous findings,[13,26] the main reasons for attendance and low admission rates in our study

Despite high project awareness (93.8%) suggesting effective communication, utilization and compliance remained low, with 58.6% of patients not contacting SNS24. Many patients believe it cannot be used for urgent situations and even confuse it with the 112-emergency number. These findings reflect limited health literacy on healthcare service use, misconceptions about the "Call First, Save Lives" and low trust in remote assessment of perceived severe conditions. Public health campaigns should clarify SNS24's role, define "true emergency", and realign patient expectations.

When examining patients' CFSL understanding beyond basic awareness, most (57.3%) correctly identified its main goal

of directing patients appropriately and reducing Emergency Department burden. Yet 18.5% did not understand its objectives and only 12.9% recognized the key incentive of prioritization for referred individuals. This represents a missed opportunity. Uncertainty about being seen without referral (12.5%) reflects limited knowledge of conditions requiring mandatory ED admission. The extensive list of exceptions to SNS24 referral is a known challenge.[2] For this model to succeed, its purpose, benefits (e.g., shorter waits), and correct use must be clearly communicated to prevent self-referrals driven by uncertainty.

Overall satisfaction with the "Call First, Save Lives" was neutral (mean 2.98/5), contrasting with higher scores typically reported for telephone triage systems[7,15,29,30] related to convenience and accessibility.[13] Satisfaction may have declined when participant expectations were unmet,[29,31] likely reflecting perceptions that the project restricted their autonomy of direct ED access.

Recent SNS24 data reports a 75.2% call answer rate and an average 9-minute wait.[32] Our results show comparable unanswered calls rates (18.9%), but a longer 15-minute median wait with considerable undesirable extremes (IQR=25), visibly contrasting with the recommended 15-second answer-time.[33] This is corroborated by recent projections of one million unanswered calls during the 2025-26 winter season.[33] Thus, our study reveals critical SNS24 performance failures in a system operating near its limits. From users' perspective, key indicators are tangible reductions in waiting times and better operational performance.

The positive experience among those who successfully used SNS24 (81.2%) highlights its potential. However, SNS24 remained one of the least-preferred initial options in non-urgent scenarios (5.5%), suggesting that SNS24 is not yet embedded in public healthcare-seeking behavior.

Notably, some participants (16.3%) felt their issue was manageable in primary care services, which indicates SNS24 triage algorithms require accuracy improvements to avoid unnecessary Emergency Department referrals.[2]

Most patients (89.8%) had an assigned, well-rated Family Doctor. Primary care services were the preferred first option for non-urgent complaints and the most frequently used service before ED attendance (26.5%). Yet, this did not translate into practice, since PCS were largely bypassed with only four referrals (3.1%).

Literature consistently identifies factors driving patients to choose EDs over PCS, encompassing institutional and management issues and patient perceptions. In agreement, in our study 13.8% sought hospital-level evaluation for immediate diagnostics and treatment, while reduced perceived need for primary care services (41.4%) and difficulty accessing appointments (27.6%) were more prevalent reasons.

Accordingly, evidence suggests the issue lies not in primary care services availability, since inappropriate Emergency Department use often increases when PCS are open,[12,13,34] but in difficulties obtaining timely ACC and misconceptions about PCS.26 Patients see the ED as a more direct and better-equipped setting for acute care, fearing delays or lower quality in PCS, even when accessible.[12-14,35,36] In fact, some patients advised by SNS24 to attend PCS ignored the advice and presented directly to the Emergency Department.

Misconceptions about acute care consultation use are a known problem,[12,17,36] perpetuating a misuse cycle that contributes directly to ED overcrowding.[25] Moreover, several participants misinterpreted and over-generalized the “Call First” directive, thinking SNS24 referral was a mandatory prerequisite for accessing ACC. This belief can paradoxically delay treatment and increase SNS24 call volume. Although the importance of systems that integrate primary care services and emergency care as the "Call First, Save Lives" is reinforced, the need for communication strategies that clearly differentiate referral pathways and clarify PCS role persists.

Beyond providing context for current ED use patterns, our findings expose a misalignment between ideal and actual care pathways within the National Health Service, underscoring broader systemic challenges.

SNS24-referred patients did not experience shorter waiting times (p=0.430). Since the anticipated incentive of a faster ED pathway is not materializing for those adhering to the CFSL protocol, self-referral becomes the logical behavior. This finding is consistent with the greater dissatisfaction with the project among self-referred patients (p=0.004).

No significant association was found between RP and triage level, indicating that SNS24-referrals were not clinically more urgent. This CFSL limitation was already reported, with half of SNS24-directed patients still classified as standard/non-urgent under the MTS at Emergency Department triage.[2]

Therefore, in its current state, the system may not effectively filter non-urgent cases or distinguish them enough to alter the ED case profile. This likely reflects saturation in a high-volume LHU such as Braga, eliminating triage benefits and equalizing waiting times across referral pathways.

Lastly, the binary logistic regression models, our primary analysis, revealed lower SNS24 referral for surgical cases (p=0.032), reflecting adherence to mandatory ED evaluation protocols. Older age significantly predicted lower odds of SNS24 referral (p=0.043) and contact (p=0.016), powerfully suggesting adherence challenges and patterns of direct Emergency Department access among older adults. Ultimately, patients' choice between "Call First, Save Lives" and self-referral reflected access and literacy barriers rather than clinical need, directly affecting satisfaction with the project.

Conclusion

This study is the first patient-centered assessment of the "Call First, Save Lives" in a Portuguese public Emergency Department, combining patient-reported and EHRs data to explore healthcare use, decision-making, and SNS24 experience. Our findings demonstrate a substantial discrepancy

between the intended policy objectives and its operational implementation.

Despite broad awareness, intended systemic integration remains limited by the short implementation period and persistent self-referrals, driven by patients' overestimation of urgency and low health literacy, particularly, poor understanding of CFSL's core benefits and misconceptions about primary care services.

Notably, self-referral represents a rational response within a system where compliance to the SNS24 protocol currently offers no tangible advantage, such as reduced waiting times, but instead leads to operational inefficiencies.

Public awareness campaigns alone are insufficient without targeted strategies to overcome systemic barriers and behavioral patterns. CFSL's success depends less on promotion than on adoption barriers, refining triage processes, and improving public understanding of care urgency levels. Without clear communication of its benefits and demonstrable operational reliability, the initiative is unlikely to achieve its transformative potential, particularly among the older users identified as least likely to call first.

Ultimately, self-referral persists because, in a saturated system, calling first still yields no real benefit, especially among those who see the Emergency Department as the safest route to care. ■

Contributorship Statement
SRS, IGM – Manuscript writing.
JCA – Critical review of the manuscript content.
All authors approved the final version to be published.

Declaração de Contribuição
SRS, IGM – Escrita do artigo.
JCA – Revisão crítica do conteúdo.
Todos os autores aprovaram a versão final a ser publicada.

Ethical Disclosures
Conflicts of Interest: The authors have no conflicts of interest to declare.
Financing Support: This work has not received any contribution, grant or scholarship
Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of patient data.
Protection of Human and Animal Subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and those of the Code of Ethics of the World Medical Association (Declaration of Helsinki as revised in 2024).
Provenance and Peer Review: Not commissioned; externally peer-reviewed.

Responsabilidades Éticas
Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.
Fontes de Financiamento: Não existiram fontes externas de financiamento para a realização deste artigo.
Confidencialidade dos Dados: Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.
Proteção de Pessoas e Animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pela Comissão de Ética responsável e de acordo com a Declaração de Helsínquia revista em 2024 e da Associação Médica Mundial.
Proveniência e Revisão por Pares: Não comissionado; revisão externa por pares.

© 2026 Sociedade Portuguesa de Medicina Interna. This is an open-access article under the CC BY-NC 4.0. Re-use permitted under CC BY-NC 4.0. No commercial re-use.
© 2026 Sociedade Portuguesa de Medicina Interna. Este é um artigo de acesso aberto sob a licença CC BY-NC 4.0. Reutilização permitida de acordo com CC BY-NC 4.0. Nenhuma reutilização comercial.

Correspondence / Correspondência:
Sílvia Raquel Monteiro dos Santos - silvia.raquel.santos@ulsb.min-saude.pt
Rua Dr. Francisco Machado Owen nº 154 2º DTO 4715-021 São Vítor, Braga, Portugal

Received / Recebido: 30/12/2025
Accepted / Aceite: 14/05/2026
Published Online / Publicado Online: 23/06/2026
Published / Publicado: 23/06/2026

REFERENCES

1. Berchet C. Emergency care services: trends, drivers and interventions to manage the demand. OECD Health Working Papers No. 83. Paris: OECD Publishing; 2015.
2. Goiana-da-Silva F, Costa S, Malcata F, Sá J, Vasconcelos R, Cabral M, et al. Addressing the overuse of hospital emergency departments in the Portuguese NHS: a new paradigm. Front Public Health. 2025;12:1444951. doi:10.3389/fpubh.2024.1444951
3. Pearce S, Marchand T, Shannon T, Ganshorn H, Lang E. Emergency department crowding: an overview of reviews describing measures causes, and harms. Intern Emerg Med. 2023;18:1137–58. doi:10.1007/s11739-023-03239-2
4. Di Somma S, Paladino L, Vaughan L, Lalle I, Magrini L, Magnanti M. Overcrowding in emergency department: an international issue. Intern Emerg Med. 2015;10:171–5. doi:10.1007/s11739-014-1154-8
5. Sartini M, Carbone A, Demartini A, Giribone L, Oliva M, Spagnolo AM, et al. Overcrowding in emergency department: causes, consequences, and solutions—a narrative review. Healthcare. 2022;10:1625. doi: 10.3390/healthcare10091625
6. Ministério da Saúde. Portaria n.o 438/2023, de 15 de dezembro. Diário da República [Internet]. 2023 Dec 15;241(1):46–9 [cited 2025 May 12]. Available from: https://diariodarepublica.pt/dr/detalhe/portaria/438-2023-261867084.
7. Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. Br J Gen Pract. 2005;55:956–61.
8. Ministério da Saúde. Portaria n.o 336/2024, de 19 de dezembro. Diário da República [Internet]. 2024 Dec 19;246(1):53–6 [cited 2025 May 12]. Available from: https://diariodarepublica.pt/dr/detalhe/portaria/336-2024-900706899.
9. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: a primer. Front Public Health. 2018;6:149. doi:10.3389/fpubh.2018.00149
10. Thierrin C, Augsburger A, Dami F, Monney C, Staeger P, Clair C. Impact of a telephone triage service for non-critical emergencies in Switzerland: A cross-sectional study. PLoS One. 2021;16:e0249287. doi:10.1371/journal.pone.0249287
11. Roivainen P, Hoikka MJ, Ala-Kokko TI, Kääriäinen M. Patient satisfaction

with telephone care assessment among patients with non-urgent prehospital emergency care issues: A cross-sectional study. Int Emerg Nurs. 2021;59:101070. doi:10.1016/j.ienj.2021.101070

12. Ferreira BD, Neto CP, Loureiro R, Almeida C. Fatores determinantes na procura de cuidados de saúde a um SUB, por utentes de uma USF. Rev Port Clin Geral. 2024;40:432–42. doi:10.32385/rpmgf.v40i5.13987
13. Dixe M, Passadouro R, Peralta T, Ferreira C, Lourenço G, Sousa P. Determinants of non-urgent emergency department use. Rev Enferm Ref. 2018;4:41–52. doi:10.12707/RIV17095
14. Unwin M, Kinsman L, Rigby S. Why are we waiting? Patients' perspectives for accessing emergency department services with non-urgent complaints. Int Emerg Nurs. 2016;29:3–8. doi:10.1016/j.ienj.2016.09.003
15. Zinger ND, Blomberg SN, Lippert F, Collatz Christensen H. Satisfaction of 30 402 callers to a medical helpline of the Emergency Medical Services Copenhagen: a retrospective cohort study. BMJ Open. 2019;9:e029801. doi:10.1136/bmjopen-2019-029801
16. Riiskjaer E, Ammentorp J, Kofoed P-E. The value of open-ended questions in surveys on patient experience: number of comments and perceived usefulness from a hospital perspective. Int J Qual Health Care. 2012;24:509–16. doi:10.1093/intqhc/mzs039
17. Simas A, Amorim N, Cabrita C, Veloso R, Morais J, Suzano R. Comportamento do utilizador do serviço de urgência do Hospital da Horta-Açores. Rev Port Med Interna. 2025;32:12-9.
18. Bujang MA, Omar ED, Foo DHP, Hon YK. Sample size determination for conducting a pilot study to assess reliability of a questionnaire. Restor Dent Endod. 2024;49:e3. doi:10.5395/rde.2024.49.e3
19. Grech V, Calleja N. WASP (Write a Scientific Paper): Parametric vs. non-parametric tests. Early Hum Dev. 2018;123:48–9. doi:10.1016/j.earlhumdev.2018.04.014
20. Jung S. Stratified Fisher's exact test and its sample size calculation. Biom J. 2014;56:129–40. doi:10.1002/bimj.201300048
21. McHugh ML. The Chi-square test of independence. Biochem Med. 2013;143–9. doi:10.11613/BM.2013.018
22. Peduzzi P, Concato J, Kemper E, Holford TR, Feinstein AR. A simulation study of the number of events per variable in logistic regression analysis. J Clin Epidemiol. 1996;49:1373–9. doi:10.1016/S0895-4356(96)00236-3
23. Serviço Nacional de Saúde. Portal da Transparência. Atendimentos em Urgência Hospitalar por Triagem de Manchester [Hospital Emergency Department Attendances by Manchester Triage] [Internet]. Lisbon: SNS; [cited 2025 October 4]. Available from: https://transparencia.sns.gov.pt/explore/dataset/atendimentos-em-urgencia-triagem-manchester/table/?disjunctive.regiao&disjunctive.institucao&sort=tempo&refine.regiao=Regi%C3%A3o+de+Sa%C3%BAde+Norte&q=braga.
24. Botelho A, Dias IC, Fernandes T, Pinto LMC, Teixeira J, Valente M, et al. Overestimation of health urgency as a cause for emergency services inappropriate use: Insights from an exploratory economics experiment in Portugal. Health Soc Care Community. 2019;27:1031–41. doi:10.1111/hsc.12720
25. Carret ML, Fassa AC, Domingues MR. Inappropriate use of emergency services: a systematic review of prevalence and associated factors. Cad Saude Publica. 2009;25:7–28. doi:10.1590/S0102-311X2009000100002
26. Godinho de Sousa A, Dos Santos Carneiro CA. Doentes Não Urgentes no Serviço de Urgência de um Hospital Português: Motivos e Características de Utilização. Acta Med Port. 2025;38:708–17. doi:10.20344/amp.23644
27. Tran DT, Gibson A, Randall D, Havard A, Byrne M, Robinson M, et al. Compliance with telephone triage advice among adults aged 45 years and older: an Australian data linkage study. BMC Health Serv Res. 2017;17:512. doi:10.1186/s12913-017-2458-y
28. Serviço Nacional de Saúde (Portugal). Portal da Transparência. Atendimentos por tipo de urgência hospitalar [Attendances by type of hospital emergency] [Internet]. Lisbon: SNS; [cited 2025 October 4]. Available from: https://transparencia.sns.gov.pt/explore/dataset/atendimentos-por-tipo-de-urgencia-hospitalar-link/table/?sort=tempo&q=Braga.
29. Carrasqueiro S, Oliveira M, Encarnação P. Evaluation of telephone triage and advice services: a systematic review on methods, metrics and results. Stud Health Technol Inform. 2011;169:407–11.
30. Ismail SA, Gibbons DC, Gnani S. Reducing inappropriate accident and emergency department attendances: a systematic review of primary care service interventions. Br J Gen Pract. 2013;63:e813-20. doi:10.3399/bjgp13X675395
31. Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. Fam Pract. 2003;20:311–7. doi:10.1093/fampra/cmg313
32. Serviço Nacional de Saúde (Portugal). Portal da Transparência. Atividade Operacional do SNS 24 [Operational Activity of SNS 24] [Internet]. Lisbon: SNS; [cited 2025 October 4]. Available from: https://transparencia.sns.gov.pt/explore/dataset/atividade-operacional-do-sns-24/table/?sort=ordem.
33. Goiana-da-Silva F, Amorim-Lopes M, Correia F, Pereira J, Ribeiro A, Tude Graça D, et al. The growing pains of the 2024/2025 Portugal's NHS telephone triage system national rollout. Front Public Health. Forthcoming 2025. doi: 10.3389/fpubh.2025.1694713.
34. Organisation for Economic Co-operation and Development (OECD). Realising the Potential of Primary Health Care. Paris: OECD Publishing; 2020.
35. Uscher-Pines L, Pines J, Kellermann A, Gillen E, Mehrotra A. Emergency department visits for nonurgent conditions: systematic literature review. Am J Manag Care. 2013;19:47–59.
36. McIntyre A, Janzen S, Shepherd L, Kerr M, Booth R. An integrative review of adult patient-reported reasons for non-urgent use of the emergency department. BMC Nurs. 2023;22:85. doi:10.1186/s12912-023-01251-7