

# Socio-demographic and health perception factors influencing non-urgent emergency department visits in the Veneto region: a cross-sectional pilot study

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## Abstract

Emergency Department (ED) overcrowding is a significant issue in Italy, impacting resource allocation and patient care. Patients seeking ED care vary widely in terms of demographic characteristics and health perceptions, often presenting with non-urgent issues. Understanding the factors influencing ED utilization is essential for mitigating congestion. This study aims to assess personal and service-related factors influencing patients' decisions to seek ED care, focusing on socio-demographic variables and health perceptions. A pilot study was conducted using a validated questionnaire adapted for the ED context. The survey was administered to patients with non-urgent visits (white triage code) across

four hospitals during a two-week period in October 2022. Statistical analysis, including chi-square and Fisher's exact tests, identified associations between socio-demographic factors, health perceptions, and ED utilization motivations. A total of 792 questionnaires were analyzed. Findings revealed a "typical patient" characterized by high anxiety, perceived urgency, and overestimation of symptom severity. Significant associations were found between age, education level, chronic conditions, and ED utilization. Socio-demographic characteristics and health perceptions significantly influence ED visits. Improving patient education and awareness of alternative healthcare options may help alleviate ED overcrowding.

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## Introduction

Emergency Departments (EDs) are a cornerstone of modern healthcare systems, providing immediate care for acute and life-threatening conditions. However, in recent years, many EDs across Europe and globally have faced persistent overcrowding, driven in part by a significant volume of non-urgent visits. This phenomenon places substantial strain on emergency services, contributes to longer waiting times, increases healthcare costs, and can compromise the quality and timeliness of care for patients requiring immediate attention.<sup>1</sup>

The inappropriate use of EDs – defined as visits that could be safely managed in primary or community care settings – has become a critical issue, particularly in the aftermath of the COVID-19 pandemic. The crisis highlighted pre-existing system fragilities and deepened patient reliance on hospital-based services, often bypassing general practitioners and territorial services.<sup>2</sup> Recent evidence shows that while overall ED attendances dropped sharply during the pandemic's initial waves, non-urgent visits quickly rebounded, indicating entrenched patterns in patient behavior.<sup>3-5</sup>

Several factors have been associated with inappropriate ED utilization, including demographic characteristics (age, education, socio-economic status), chronic disease burden, psychological distress (such as anxiety about symptoms), and, crucially, patient perceptions of urgency and service availability. Studies conducted in various European contexts have demonstrated that reduced accessibility to general practitioners, lack of trust in primary care, and the belief that EDs offer quicker and more comprehensive care are recurrent motivators for non-urgent access.<sup>6,7</sup>

In Italy, as in other countries, EDs are a point of first contact for many patients. Despite efforts to redirect inappropriate ED usage through health education campaigns, regional disparities and organizational challenges persist.<sup>8,9</sup> However, there remains a lack of up-to-date, patient-level data on the socio-demographic and perceptual determinants of non-urgent ED attendance, particularly at the local level.

This study seeks to address this gap by exploring the factors influencing non-urgent ED visits in a selected region of Northern Italy, with a focus on patient-reported motivations, health beliefs, and contextual service variables. By identifying the characteristics of patients who contribute most to potentially avoidable ED use, the findings aim to support the development of targeted strategies to reduce overcrowding and promote more appropriate healthcare-seeking behavior.

## Materials and Methods

This study is a prospective, descriptive, cross-sectional pilot investigation conducted in four EDs located in three healthcare areas, designated A, B, and C, within a province of the Veneto region in Northern Italy (Table 1). The primary objective was to analyze the socio-demographic and perceptual determinants of non-urgent ED use, focusing specifically on patients assigned a white triage code.

Data were collected over a two-week period, from October 4 to October 17, 2022. To capture variability in patient access patterns, data collection was structured across two predefined time slots: between 10:00 and 18:00 and between 18:00 and 24:00. A team of three interviewers, all nurses in training, rotated across the selected EDs, ensuring consistent presence during these timeframes. A triage nurse was always present to assist in the preliminary identification of eligible patients and to verify access through the “clean” pathway, as per hospital protocol.

Participants were eligible if they were at least 18 years old, presented to the ED with a white triage code, and were not suspected of having COVID-19. Patients with green, yellow, orange, or red triage codes were excluded. Further exclusion criteria included language barriers that impeded understanding of the questionnaire, disorientation or cognitive impairment, and uncooperative or aggressive behavior. In cases where patients could not independently complete the questionnaire but were accompanied by a family member or caregiver able to do so, the latter was permitted to respond, provided that the patient gave verbal consent and the interviewer supervised the process.

Participants were approached after triage assignment but before clinical evaluation to avoid interfering with their care. The survey was presented as voluntary and anonymous, and participation was not incentivized. After receiving verbal and written information about the study, each participant was invited to complete a structured questionnaire, either autonomously or with assistance from study personnel. The questionnaire, detailed in *Supplementary Materials, Table 1*, was validated by the Ethics Committee of the Ospedali Riuniti di Ancona<sup>8</sup> and developed by a multidisciplinary working group comprising statisticians, emergency physicians, and healthcare administrators. It included both closed and multiple-choice questions covering socio-demographic characteristics, motivations for accessing the ED, and perceived health status at the time of the visit.

In total, 792 questionnaires were completed during the study period. Of the 821 patients approached, 29 declined to participate, yielding a response rate of 96.4%. The most commonly reported reasons for refusal were fatigue, discomfort with the questionnaire, or lack of interest in research participation.

## Data collection

The tool used for data collection was divided into four sections. Three of these sections focused on understanding the patient’s socio-demographic background, reasons for visiting the ED, and self-perceived health status. The fourth section was dedicated solely to the interviewer’s observations.

Section A collected data on the patient’s age, gender, nationality, educational level, occupation, place of residence, cohabitation status, healthcare exemptions, and distance from the hospital. The analysis of these factors aimed to uncover patterns in who typically seeks non-urgent care and explore the socio-economic and geographic influences on ED usage.

Section B investigated a wide array of factors, such as the patient’s arrival and completion times at the ED, the mode of arrival (*e.g.*, assisted or independent), whether they had clinical check-ups in the past 12 months, previous ED visits, and primary care physician involvement. Motivations for visiting the ED were categorized into personal reasons (*e.g.*, self-perception of health, need for a medical certificate, work-related injuries) and healthcare-related reasons (*e.g.*, timeliness, perceived effectiveness of the ED, 24/7 accessibility).

Section C focused on the patient’s self-assessment of their health, including the duration of their health issue, general health rating, days of physical illness, mental health challenges in the past month, impairment in daily activities, chronic disease prevalence, and medication use for chronic conditions. The goal was to correlate self-perceived urgency with the assigned triage code and examine how chronic conditions influenced ED visits.

The interviewer also completed additional fields, including date, day of the week, ED reference location, and any assistance needed by the patient during the completion of the questionnaire. For patients who declined participation, basic demographic and hospital information were recorded. The collected data was processed using Excel and descriptive statistical tools, including frequencies and distribution measures. Both univariate and bivariate analyses were performed to identify significant associations between the various factors.

Continuous variables, such as age, the number of days with physical illness, and impairment in daily activities, were categorized for univariate analysis. Categorical variables were analyzed using absolute and relative frequencies. To analyze motivations for ED visits, bivariate distributions were tested against the collected socio-demographic and clinical variables. Statistical significance was determined using Pearson’s chi-square test or Fisher’s exact test, with a *p*-value of <0.05 considered significant.

Data analysis was conducted using Stata version 14, allowing for a thorough understanding of the factors influencing ED visits

**Table 1.** Healthcare services for the study areas (ISTAT, 2021).

Study area	Municipalities	Emergency departments	Total population	Elderly population (>65 years)	Elderly population (%)
A	28	2	275,322	53,118	20.64%
B	13	1	121,406	26,386	21.73%
C	44	1	177,729	43,548	24.50%

and identifying patterns that could inform strategies to reduce overcrowding and inappropriate use of ED services.

## Results

A total of 821 questionnaires were collected across four hospital sites ( $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ), with 29 refusals. The gender distribution was relatively balanced, with a slight predominance of males aged between 40 and 60 years. The majority of respondents were Italian citizens (91.92%). Regarding educational attainment, the most represented groups included individuals with a middle school diploma (35.56%) and those with a high school or university degree (37.37%) (*Supplementary Materials, Table 2*). The most frequent occupational categories were retirees (26.14%) and employed workers (22.10%).

In terms of living arrangements, a substantial proportion of respondents reported living with a spouse or partner (43.31%) or with other family members (42.17%). With respect to emergency room (ER) ticket exemptions, 66.54% were non-exempt, while 16.79% held exemptions due to chronic illness or disability. The majority of participants (69.44%) reported traveling between 6 and 35 km to reach the hospital.

Most patients arrived by private transport (92%), followed by ambulance (5.81%) and other means (2.4%). Regarding healthcare utilization, 63.64% had undergone clinical evaluations in the previous year, while 36.36% had not. Emergency department use in the prior 12 months was reported as follows: 59.6% had not visited, 29.17% had visited 1-2 times, and 11.24% had presented three or more times.

A General Practitioner (GP) followed 63.64% of participants, and 63.76% resided less than 5 km from their GP's practice. In 65.28% of cases, the decision to access the ED was self-initiated, followed by recommendations from GPs (13.64%) and out-of-hours medical services (11.62%).

Patients' reported motivations for accessing the ED were grouped into two primary categories: personal reasons (e.g., fear related to symptoms, trauma, perceived urgency) reported by 50.4%, and service-related reasons (e.g., belief in superior resources or faster

resolution in the ED) reported by 69.9%.

Symptom duration prior to ED presentation varied: 32.2% of patients reported symptoms lasting less than 24 hours, 27.65% between 2 and 6 days, and 21.21% for more than 7 days. Perceived general health was rated as "good" or "very good" by 58.33% of respondents, "fair" by 33.21%, and "poor" or "very poor" by 8.46%. Physical and mental health-related functional limitations in the previous month were absent in 46.97% and 60.98% of participants, respectively. Chronic conditions were reported by 35.57% of the sample, and 35.73% reported taking medications for chronic illnesses.

With regard to temporal access patterns, ED visits peaked on Mondays, particularly between 11:00 AM and 5:00 PM, with marked surges observed around 11:00 AM and again at 5:00 PM.

Statistical analyses (chi-square and Fisher's exact test) (Table 2) revealed significant associations ( $p \leq 0.05$ ) between specific motivations and sociodemographic characteristics. Patients aged  $\geq 75$  years, those with low educational levels, and individuals with chronic conditions were significantly more likely to report fear-induced symptoms as their main reason for presentation ( $p < 0.05$ ). Traumatic injuries were more frequently reported among younger adults, males, and individuals in manual labor occupations ( $p < 0.05$ ). Perceived urgency ("no time to lose") was more prevalent among older adults and those with lower education ( $p < 0.05$ ).

Service-related motivations, such as the belief that the ED had more resources or would provide faster care, were significantly associated with ambulance transport ( $p = 0.014$ ). Patients living in rented accommodations were more likely to cite proximity as a reason for ED use ( $p = 0.023$ ), and those who had not received clinical evaluations in the previous year were more likely to perceive the ED as the most accessible care option ( $p = 0.011$ ).

Moreover, non-Italian patients reported higher perceptions of long wait times for diagnostic testing ( $p = 0.037$ ). Individuals with symptoms lasting more than two days were also significantly more likely to cite long waiting times for exams as a motivating factor ( $p = 0.021$ ).

A subgroup analysis of 119 patients who autonomously chose to attend the ED during weekday daytime hours, despite residing closer to their GP than the hospital, suggests that proximity alone

**Table 2.** Statistically significant associations between patient characteristics and motivations for emergency department access.

Motivation for ED Access	Associated variable	p
Fear-induced symptoms	Age $\geq 75$	<0.05
Fear-induced symptoms	Low educational level	<0.05
Fear-induced symptoms	Presence of chronic conditions	<0.05
Fear-induced symptoms	Poor perceived health status	<0.05
Fear-induced symptoms	Symptom duration >5 days	<0.05
Traumatic injuries	Younger age	<0.05
Traumatic injuries	Male gender	<0.05
Traumatic injuries	Manual labor occupation	<0.05
Urgency ("no time to lose")	Older age	<0.05
Urgency ("no time to lose")	Low educational level	<0.05
ED perceived to have more resources/faster resolution	Arrival by ambulance	0.014
ED proximity	Living in rented accommodation	0.023
ED as most accessible option	No clinical check in the previous year	0.011
Long exam waiting times in other settings	Non-Italian nationality	0.037
Long exam waiting times in other settings	Symptom duration >2 days	0.021

does not account for the preference for emergency care. This finding raises questions regarding patients' knowledge, perceptions, and trust in primary care services.

This study provides insights into the complex set of factors influencing the inappropriate use of ED services for non-urgent conditions. The findings underscore the multifaceted nature of ED utilization, shaped by both individual-level perceptions and broader systemic determinants. Importantly, the patterns observed align with an emerging body of literature suggesting that socio-demographic vulnerability, limited health literacy, and fragmented primary care structures remain key predictors of low-acuity ED presentations.<sup>10</sup>

The association between fear-related symptoms and factors such as advanced age, low educational attainment, and the presence of chronic conditions is consistent with prior studies indicating that older patients often interpret nonspecific or persistent symptoms as indicative of acute risk.<sup>11</sup> Similarly, individuals with chronic illnesses and limited access to longitudinal care tend to use the ED not only for acute exacerbations but also to address gaps in chronic disease management.<sup>12</sup> The finding that symptom duration exceeding five days was associated with increased ED use further supports this hypothesis, echoing research suggesting that prolonged symptoms in the absence of timely primary care consultations can escalate perceived urgency.<sup>13</sup>

The higher frequency of trauma-related visits among younger males and individuals in manual labor occupations corresponds with occupational health data showing a disproportionate burden of injury-related ED use in these subpopulations.<sup>14</sup> These patterns reinforce the importance of workplace safety initiatives and targeted health education in mitigating avoidable ED utilization among working-age adults.

Motivations related to the perceived efficiency of ED services, such as the belief that the ED offers faster diagnostic resolution, were particularly pronounced among patients who arrived by ambulance. This finding is consistent with evidence from both European and North American contexts, where patients frequently report choosing the ED due to frustrations with delays in diagnostic pathways through primary care.<sup>15</sup> It is notable that these perceptions persist even in healthcare systems with theoretically strong gatekeeping functions, suggesting a possible erosion of trust in the effectiveness and responsiveness of general practitioners.

The perception of long diagnostic wait times was especially prevalent among non-Italian patients, aligning with recent studies on migrant populations' access to healthcare. Language barriers, administrative complexity, and cultural incongruence have been identified as factors that limit engagement with primary care, resulting in an overreliance on EDs as more navigable and immediate care settings.<sup>16,17</sup> These observations underscore the need for culturally competent, multilingual outreach strategies within primary care networks.

An intriguing pattern emerged among patients who independently chose to attend the ED during weekday working hours, despite living closer to their general practitioner. This suggests a behavioral preference for EDs even when alternatives are geographically accessible. Similar patterns have been described in OECD surveys, pointing to a progressive decline in the perceived role of general practitioners as first-contact care providers.<sup>18</sup> Such findings highlight the importance of investigating patients' trust in, and knowledge of, primary care services, particularly in systems undergoing reform.

The COVID-19 pandemic further accentuated many of the dynamics identified in this study. During the acute phases of the pandemic, several authors reported a marked reduction in non-

urgent ED visits, followed by a rebound effect driven by residual fear, service disruptions, and backlogs in primary care access.<sup>19</sup> The perception of the ED as a safer or more reliable setting during times of systemic strain may have reinforced existing patterns of overuse, especially among vulnerable populations. This emphasizes the need to interpret current findings in light of the post-pandemic reconfiguration of patient expectations and behaviors.

While many of our findings align with existing studies, some discrepancies merit attention. While earlier studies often reported lower ED use among individuals followed by a GP, our results suggest that GP follow-up alone does not necessarily deter ED access, particularly among patients who perceive a need for urgency or diagnostic inefficiency in primary care. Notably, the subgroup analysis revealed that even individuals living closer to their GP than to the hospital frequently chose the ED autonomously, underscoring the role of perceived quality and responsiveness over geographic accessibility.

In light of these results, it becomes clear that strategies aimed at reducing ED overcrowding must be multidimensional. Simply educating patients about appropriate ED use is insufficient if not accompanied by structural reforms that improve primary care accessibility, timeliness, and continuity. Promising interventions include the implementation of digital triage platforms, the integration of community health workers into primary care teams, and the expansion of advanced access scheduling models.<sup>19,20</sup> Tailoring these interventions to high-risk populations, such as those with low educational attainment, unstable housing, or migrant backgrounds, may yield the greatest impact.

Ultimately, non-urgent ED visits should not be viewed as mere misuse of healthcare resources, but rather as indicators of systemic misalignment between population needs and healthcare delivery. Future research should adopt a mixed-methods approach to capture the cognitive, emotional, and structural factors influencing patient decision-making. This will be essential to designing context-sensitive interventions that address both perceived and actual barriers to primary care.

Several limitations should be considered when interpreting the results of this study. First, the use of a cross-sectional design limits causal inference; observed associations between patient characteristics and motivations for ED use cannot establish temporal or causal relationships. Second, data were self-reported, introducing potential for recall bias and social desirability bias, particularly in responses related to health status, GP interactions, and motivations for care-seeking. Third, the study was conducted across four hospitals in a single geographic region, which may limit generalizability to other settings with different healthcare structures, population demographics, or cultural norms. Fourth, while the questionnaire included both closed- and open-ended items, the depth of qualitative insights was limited, which restricts our ability to fully understand the subjective rationale behind ED use. Finally, some potentially influential factors, such as health literacy, trust in primary care, or previous negative healthcare experiences, were not assessed and should be explored in future studies.

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## Conclusions

Inappropriate visits to the ED represent one of the main factors contributing to overcrowding, a phenomenon that is not only a concern in Italy but also on an international level. The motivations driving individuals to seek care at the ED vary, with personal factors such as the overestimation of perceived symptoms playing a

significant role. These symptoms are often perceived as emergent, prompting patients to seek immediate healthcare responses.

Additionally, there is widespread healthcare misinformation, which not only reflects a lack of knowledge about territorial services but also highlights a misunderstanding regarding the appropriate use of the ED. An educational intervention focused on informing the public about available community-based healthcare services and promoting correct ED usage could increase public awareness and enhance individuals' control over their health perception.

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*Online Supplementary Materials.*

*Table 1. Questionnaire.*

*Table 2. Sociodemographic characteristics.*