REVIEW ARTICLE

Causes of non-urgent care visits in the emergency department in Saudi Arabia: a systematic review

Emtenan M. Bukhari[1]*, Mohammed A. Almohammadi[2], Mona S. Buraysali[3], Ghalyah T. Kerdawi[3], Abdullah A. Aljazaeri[3], Hussam A. Alzahrani[4], Omar M. Alsuwat[4], Wefag J. Sawadi[3], Mohammed A. Albokhari[5]

ABSTRACT

Background: This systematic review synthesizes evidence on the prevalence, causes, and associated factors of non-urgent emergency department (ED) visits in Saudi Arabia, which contribute to overcrowding, increased costs, and delays in urgent care.

Methods: We conducted a systematic review following Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines. PubMed, Scopus, Web of Science, and Google Scholar were searched from inception to the search date. We included observational studies from Saudi Arabia reporting prevalence, reasons, or factors associated with non-urgent ED visits. Three reviewers screened titles/abstracts and assessed full texts. Two reviewers extracted data using a standardized form and assessed study quality using the Joanna Briggs Institute critical appraisal tools. Because of heterogeneity across definitions and outcomes, we synthesized findings narratively.

Results: Eleven studies published between 2002 and 2024 were included (total sample size 30,684). Non-urgent ED visit prevalence ranged from 20.7% to 82.4% (mean 49.75%). Most studies defined non-urgent visits using the Canadian Triage and Acuity Scale levels IV–V. Younger age groups were most frequently associated with non-urgent ED use. Commonly reported drivers included dissatisfaction with primary healthcare services, limited appointment availability or working hours, and perceived faster or better ED care. Risk of bias was low to moderate.

Conclusions: Non-urgent ED visits represent a substantial burden in Saudi Arabia. Improving access to high-quality primary healthcare, strengthening triage and referral processes, and increasing public awareness may reduce non-urgent ED use and preserve ED capacity for urgent care.

Keywords: Emergency service, hospital, primary health care, access to primary care, triage, Saudi Arabia.

Introduction

Emergency departments (EDs) provide immediate care for acute and life-threatening conditions. However, many ED visits involve non-urgent problems that could be managed in primary healthcare centers (PHCs). This pattern contributes to ED overcrowding, increases healthcare costs, and delays care for patients with true emergencies. It also suggests inefficiencies in healthcare utilization and potential gaps in public understanding of appropriate care pathways [1,2].

International studies have reported high rates of non-urgent ED use. A U.S. systematic review estimated that approximately 37% (range: 8%-62%) of ED visits were non-urgent. Factors associated with non-urgent use included younger patient age, ease of access to the ED,

Correspondence to: Emtenan M. Bukhari
*College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia.
Email: Emtenan136@gmail.com
Full list of author information is available at the end of the article.
Received: 06 February 2026 | **Revised**: 03 May 2026 | **Accepted**: 13 May 2026

and limited awareness of alternative care options [2,3]. In South Africa, qualitative research in the Western Cape found that many patients with non-urgent conditions attended emergency centres because of barriers to primary care access, perceived limitations in the quality of PHC, and limited trust in referral pathways, which contributed to inappropriate use of emergency services [4]. A descriptive study in Kimberley similarly reported that most self-referred non-urgent patients had access to PHC clinics (87.9%) but still preferred the ED, largely because of familiarity with hospital services (75.5%), requests for investigations such as X-rays and laboratory tests (71.0%), and the belief that their condition required emergency care (93.7%) [5]. These findings suggest that patient perceptions, rather than clinical urgency, are key drivers of non-urgent ED attendance. Similar patterns have been reported in Europe and Turkey. In France, 43% of patients bypassed primary healthcare services in favor of ED care because they perceived faster service or did not attempt to contact family physicians. In Turkey, 71% of patients with non-urgent conditions preferred ED care over primary healthcare centres because of easier access, limited PHC appointment availability, and perceptions of better care [6,7].

In Saudi Arabia, multiple studies have described similar patterns of non-urgent ED use. Common non-urgent concerns include sore throat, musculoskeletal pain, and requests for medication refills [3,8]. Regional studies conducted in Jeddah, Al-Qassim, the Southern region, and Riyadh have identified contributing factors such as dissatisfaction with PHC services, limited appointment availability, and low awareness of the triage system [8]. Surveys of Saudi residents indicate that nearly half prefer emergency departments over primary healthcare centers for non-urgent concerns, citing rapid care, ease of access, and limited availability of same-day PHC appointments [3].

Although international evidence has examined non-urgent ED utilization extensively, a comprehensive synthesis focused on Saudi Arabia remains limited. A systematic review is therefore warranted, given the unique healthcare structure and regional differences within the Kingdom. Accordingly, this systematic review aims to identify, synthesize, and summarize published studies examining the causes of non-urgent visits to emergency departments in Saudi Arabia.

Methods

Design and protocol registration

This systematic review followed the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines to identify and summarize studies reporting the causes, prevalence, and associated factors of non-urgent visits to emergency departments in Saudi Arabia. The protocol was registered in the International Prospective Register of Systematic Reviews (CRD420251073645).

Data source and search strategy

We conducted a comprehensive systematic search to identify studies addressing non-urgent visits to emergency departments in Saudi Arabia. We searched PubMed, Google Scholar, Web of Science, and Scopus from inception to the search date (June 2025). The search strategy included relevant keywords and Medical Subject Headings terms. We used the following search string: ("Emergency Service, Hospital" OR "Emergency Department" OR "Emergency Room" OR "ED" OR "Emergency Service") AND ("Non-urgent" OR "Non-urgent visit" OR "Inappropriate" OR "Unnecessary") AND ("Saudi Arabia" OR "KSA"). We did not search additional grey literature or unpublished sources.

Eligibility criteria

We defined eligibility criteria before study selection. We included observational studies conducted in Saudi Arabia. The population of interest consisted of individuals presenting to EDs for non-urgent visits. We included studies that reported reasons, prevalence, or associated factors related to non-urgent ED visits. We excluded studies conducted outside Saudi Arabia or those that did not report relevant outcomes. We included only studies published in English, with no restrictions on publication date.

Study selection

We imported all retrieved records into Rayyan (Rayyan Systems Inc, Cambridge, MA, USA) for de-duplication and screening. Three independent reviewers screened titles and abstracts and then performed a full-text review of potentially eligible articles. Reviewers resolved disagreements through discussion and, when needed, consultation with a senior reviewer to achieve consensus.

Data collection and items

Two independent reviewers extracted data using a predesigned Microsoft Excel spreadsheet (Microsoft, Inc., Redmond, WA). Extracted variables included authors, publication year, study design, study duration, sample size, study setting, number of centers, participant demographics, causes or reasons for non-urgent ED visits, associated factors, and prevalence. Reviewers resolved disagreements through discussion.

The primary outcome was the main reason patients visited the ED for non-urgent conditions. Secondary outcomes included the prevalence of non-urgent ED visits and factors associated with non-urgent visits. When applicable, we extracted and reported effect measures such as odds ratios (ORs), percentages, *p*-values, and confidence intervals (CIs). We made no assumptions about missing data beyond those reported in the original studies.

Risk of bias assessment

We assessed methodological quality using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies. This tool includes nine items evaluating participant selection, measurement

of exposures and outcomes, assessment of confounding, and appropriateness of statistical analyses. Two reviewers independently assessed each study. A third reviewer resolved disagreements when needed. Reviewers rated each item as "yes," "no," "unclear," or "not applicable (N/A)." Studies meeting seven or more criteria were classified as low risk of bias, those meeting four to six criteria as moderate risk, and those meeting fewer than three criteria as high risk of bias.

Data synthesis

Although we initially planned a quantitative synthesis, we could not perform a meta-analysis because of substantial heterogeneity across included studies. Effect estimates were infrequently reported, cross-tabulations (2×2) were generally unavailable, and definitions of exposures (e.g., age groups and criteria for non-urgency) varied considerably across studies. Therefore, we conducted a narrative synthesis. We summarized findings qualitatively and organized results by key outcomes, including causes and reasons for non-urgent ED visits, prevalence estimates, and associated factors. Because of heterogeneity in study designs, populations, and outcome measures, we did not perform subgroup analyses or statistical comparisons.

Results

Selection and identification of studies

The database search identified 459 records: PubMed (n = 20), Scopus (n = 51), Web of Science (n = 188), and Google Scholar (n = 200; first 20 pages). After removing 78 duplicates in Rayyan, 381 records remained for screening. Title and abstract screening excluded 339 records. We assessed 42 articles in full text using predefined eligibility criteria and included 11 studies in the systematic review (Figure 1).

Study characteristics

The 11 included studies, published between 2002 and 2024, were primarily cross-sectional, with one retrospective chart review. Studies were conducted across multiple regions of Saudi Arabia, including Jeddah, Riyadh, Najran, Buraidah, Alkharj, and Khamis Mushayt.

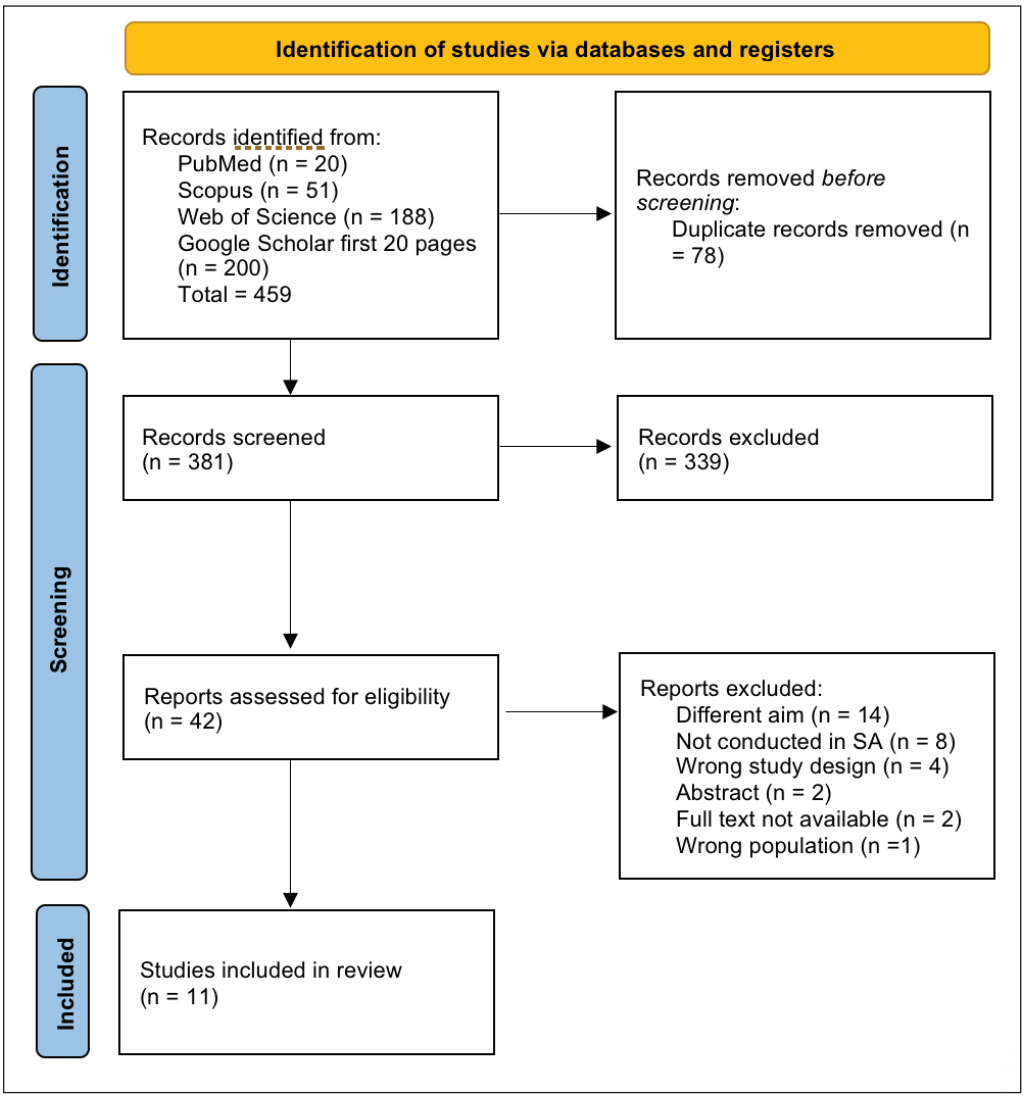

Figure 1. *PRISMA flow diagram of study selection and identification.*

***Table 1**. Characteristics of included studies.*

Study, Year published	Study design	Number of centers	City	Sample size	Population
Alyasin et al. [9]	Descriptive exploratory study	1	Riyadh	350	Adults
Bakarman et al. [10]	Cross-sectional study	1	Jeddah	388	Mixed
Dawoud et al. [11]	Cross-sectional study	3	Jeddah	300	Mixed
Siddiqui et al. [12]	Cross-sectional study	1	Alkharj	3,329	Pediatric
Al-Otmy et al. [4]	Cross-sectional study	1	Jeddah	400	Adults
Almutlaq et al. [13]	Cross-sectional study	5	Riyadh	383	Pediatric
Al Jabir et al. [14]	Cross-sectional study	1	Khamis Mushayt	400	Pediatric
Alkhaywani et al. [15]	Cross-sectional study	1	Najran	400	Adults
Alhojelan et al. [8]	Cross-sectional study	2	Buraidah	425	Adults
Alghamdi et al. [16]	Retrospective cohort study	1	Jeddah	5,429	Mixed
Alnasser et al. [1]	Retrospective chart review	1	Riyadh	18,880	Adults

***Table 2**. Definitions and triage criteria used to classify non-urgent emergency department visits.*

Study	Reported non-urgent visits (%)	Triage system	Definition of non-urgent visit
Alyasin et al. [9]	38.6%	CTAS IV-V	Non-urgent visits were identified as CTAS level IV-V ; no further description provided.
Bakarman et al. [10]	42.30%	CTAS	Non-urgent vistas were defined as CATS levels IV-V
Dawoud et al. [11]	53%	CTAS	Non-urgent visits were defined as CTAS, although the specific level were not reported
Siddiqui et al. [12]	56.90%	Alkharj Military Hospital triage criteria	Non-urgent visits were defined as cases considered manageable in primary care according to the Alkharj Military Hospital triage criteria.
Al-Otmy et al. [3]	78.5%	CTAS IV-V	Non-urgent visits were defined as CTAS levels IV-
Almutlaq et al. [13]	N/A	ESI	ESI was used for triage non-urgent visits were not explicitly defined in the study.
Al Jabir et al. [14]	56.75%	CTAS IV-V	Non-urgent visits were classified as Level IV or V according to the triage system.
Alkhaywani et al. [15]	56.75%	Local hospital triage system (CTAS-like)	Non-urgent visits were defined as level V; level IV was classified as less urgent.
Alhojelan et al. [8]	82.4%	CTAS	Patients were classified as less urgent or non-urgent based on CTAS criteria; specific CTAS levels were not reported
Alghamdi et al. [16]	20.7%	IV-V classification (Oh et al. criteria)	IV visits were defined as cases not requiring investigations, procedures, admission, or specialist follow-up.
Alnasser et al. [1]	61.40%	CTAS IV–V	Patients with CTAS levels 4 and 5 were included as non-urgent visits; levels 1-3 were excluded.

Abbreviations: CTAS, Canadian Triage and Acuity Scale; ESI, Emergency Severity Index;

Sample sizes ranged from 300 to 18,880 participants, with a total sample size of 30,684. Reporting of sex varied across studies, which limited precise estimation of male-to-female ratios. Among studies reporting sex, the proportion of male participants ranged from 36.8% to 69.1% (Table 1) [1,3,9-18].

Non-urgent presentations were defined using the Canadian Triage and Acuity Scale (CTAS) (levels IV–V), the Emergency Severity Index (ESI), or local triage systems. Reported prevalence ranged from 61.4% in a retrospective study from Riyadh to 78.5% in a tertiary center in Jeddah, and up to 82.4% in Buraidah city (Table 2) [1,3,11-16].

Considerable heterogeneity was observed in the definitions of non-urgent emergency department visits across the included studies, ranging from standardized triage systems (CTAS, ESI) to local criteria, behavioral definitions, and appropriateness-based classifications.

Prevalence of non-urgent ED attendances

The prevalence of non-urgent ED visits varied across included studies, ranging from 20.7% at King Abdulaziz Medical City, Jeddah, retrospective [18] to 82.4% in Al-Qassim, which conducted a cross-sectional survey [8], with a median prevalence of 56.75%.

Clinical factors associated with non-urgent ED visits

Age: Younger age groups, including adults under 30 years and pediatric patients, were most frequently associated with non-urgent ED attendance and showed higher odds or percentages in several studies [8,10-15]. In contrast, Al-Otmy et al. [3] reported higher odds among middle-aged adults aged 40 to 50 years compared with younger adults (adjusted OR 3.21, 95% CI 1.15-8.98). Alghamdi et al. [16] found markedly reduced odds among patients

aged >70 years. Pediatric-focused studies also reported significant associations between children and non-urgent visits [12-14]. These differences may reflect variation in health-seeking behaviors, caregiver decision-making, and access to primary care services among younger populations [9,11-15].

Sex: Sex was not consistently associated with non-urgent ED visits across included studies [1,3,8,10,14,15]. Most investigations reported no statistically significant differences between men and women presenting with non-urgent concerns [3,8,10,14,15]. However, Alghamdi et al. [16] reported that male patients had higher odds of non-urgent visits than female patients (adjusted OR 1.3, 95% CI 1.1-1.5, $p < 0.001$).

Education: Several studies reported a positive association between higher educational attainment and non-urgent ED visits [8,14,15]. University-level education was significantly associated with non-urgent presentations among adult and pediatric populations [14,16]. In Alhojelan et al. [8], college graduates had the highest rate of non-urgent visits (30.4%, $p = 0.006$). Conversely, Alyasin et al. [9] reported that patients with lower educational levels were more likely to perceive their condition as urgent. Al-Otmy et al. [3] found no significant association between education level and non-urgent attendance ($p = 0.47$). Dawoud et al. [11] reported that patients with lower education levels had higher levels of knowledge regarding PHC center services.

Employment and income: Employment status and income were not consistently associated with non-urgent ED visits. Alkhaywani et al. [15] and Al-Otmy et al. [3] found no significant association between employment status and non-urgent ED presentations ($p = 0.394$ and $p = 0.16$). Al-Otmy et al. [3] also reported no significant association between salary and non-urgent attendance ($p = 0.30$). In contrast, Dawoud et al. [11] found that lower income was significantly associated with non-urgent ED use ($p = 0.049$). Most studies did not report income as a factor.

Comorbidities: One study assessed comorbidities using multivariable analysis. Al-Otmy et al. [3] reported that patients with cancer (adjusted OR 0.37, 95% CI 0.19-0.72) or cardiovascular disease (adjusted OR 0.43, 95% CI 0.23-0.83) were significantly less likely to present with non-urgent conditions than those without these comorbidities.

Referral source: One study evaluated referral source as a predictor of non-urgent ED visits. Alghamdi et al. [16] defined inappropriate visits as those that were self-referred or referred by a primary care physician for non-urgent conditions. In multivariable analysis, referral from primary care was a significant negative predictor of inappropriate visits, whereas self-referral was more commonly associated with inappropriate use.

Residence and proximity to the ED: Three studies assessed residence or proximity in relation to non-urgent ED attendance. In multivariable analysis, Al-Otmy et al. [3] found that living inside Jeddah city was associated with lower odds of non-urgent visits compared with living outside the city (adjusted OR 0.49, 95% CI 0.28-0.88). In descriptive surveys from Najran City [15] and Khamis Mushayt [14], 14.2% of adult respondents [15] and 14.2% of pediatric caregivers [14] cited proximity to the ED as a primary reason for attending. Other studies did not include residence in statistical analyses.

Timing of visit: Two studies evaluated the timing of ED presentation. In a large retrospective cohort from Jeddah, Alghamdi et al. [16] found that weekend visits were associated with a slightly higher likelihood of inappropriate attendance compared with weekday visits (adjusted OR 1.10, 95% CI 1.00-1.30, $p = 0.037$). In Jeddah City, Bakarman et al. [10] reported that non-Saudi patients were more likely to attend during the morning shift (8:00-16:00, $p=0.039$), whereas patients aged 19 to 40 years were more likely to attend during the evening shift ($p=0.026$). However, these analyses did not explicitly distinguish between urgent and non-urgent presentations.

Primary healthcare center: Barriers to accessing primary care were frequently reported as drivers of non-urgent ED attendance. In a multicentre study in Jeddah, Dawoud et al. [11] identified several PHC-related factors, including mistrust of PHC centers (42.4%, $p = 0.011$), dissatisfaction with treatment (47.4%, $p = 0.037$), limited PHC working hours (63.8%), lack of effective diagnosis (29.4%), and lack of awareness of PHC services (47.4%). In Najran City and Khamis Mushayt, approximately 30% of respondents reported that limited PHC services influenced their decision to seek ED care [9,16]. In Al-Qassim, Alhojelan et al. [8] found that lack of PHC knowledge was cited by 33.9% of participants, whereas 1.2% cited PHC closure on weekends as a reason for ED attendance. Alyasin et al. [9] reported that not having a regular healthcare provider (63.4%), perceiving ED care as superior (44.6%), and access to investigations such as blood tests or X-rays (37.4%) were key motivators. Among pediatric populations, Almutlaq et al. [13] reported that 38.9% perceived PHCs as having limited services and that 54.7% cited limited working hours as a reason for ED attendance.

Referral source (classification criteria): In Alghamdi et al. [16], visits were classified as appropriate if patients required investigations or procedures, were admitted (inpatient or short stay unit), received specialist clinic follow up, or were referred to another hospital. Visits that did not meet any of these criteria were classified as inappropriate. In multivariable analysis, referral from PHC was a significant negative predictor of inappropriate visits, whereas self-referral predominated among inappropriate visits.

Reasons and motivations for ED attendance

Several studies reported reasons stated by patients or caregivers for attending the ED for non-urgent conditions. In Najran City [15] and Khamis Mushayt [14], the most frequently reported reasons were saving time (49.3%), obtaining an earlier appointment (48.0%), preference for receiving healthcare at the ED (15.8%), proximity to the ED (14.2%), and being at the hospital for another purpose at the time of presentation (12.3%).

***Table 3**. Factors associated with non-urgent emergency department visits and reported reasons for attendance.*

Study	Age	Gender	Nationality	Education level	Salary	Employment status	Other factors	Reasons for emergency department visit
Alyasin et al. [9]	NA	NA	–	Less than high school → higher perceived urgency ($p < 0.05$)	–	–	No regular provider 63.4%; ED better care 44.6%; access to investigations 37.4%	-
Bakarman et al. [10]	Age < 18 years ($p = 0.003$)	–	Non-Saudi more likely during morning shift ($p = 0.039$)	–	–	–	Arrival by ambulance ($p = 0.017$); Age 19-40 more likely during evening shift ($p = 0.026$)	Trauma/RTA 24.5%; fever 12.4%; GIT 11.9%; chest 7.7%; psychiatric 1.3%
Dawoud et al. [11]	Age < 15 years ($p < 0.001$)	NA	–	Lower education more knowledgeable about PHCCs ($p = 0.007$)	Lower income more likely to use ED ($p = 0.049$)	Single ($p < 0.001$)	Mistrust PHCCs 42.4%; dissatisfaction 47.4%; limited hours 63.8%; lack staff experience 44.4%; poor diagnosis 29.4%; lack PHCC knowledge 47.4%	–
Siddiqui et al. [12]	–	–	–	–	–	–	–	RTI 33.5%; trauma 16.2%; asthma 13.7%; GIT 6.6%
Al-Otmy et al. [4]	Age 40-50 more likely (OR = 3.21, 95% CI 1.15-8.98)	NA ($p = 0.45$)	–	NA($p = 0.47$)	NA($p = 0.30$)	NA($p = 0.16$)	Residing inside Jeddah (OR = 0.49); cancer (OR = 0.37); CVD (OR = 0.43)	Limited service 19.4%; referral 3.5%; easy access 26.1%; difficulty getting appointments 11.8%; urgent condition 41.1%
Almutlaq et al. [13]	–	–	–	–	–	–	Belief PHC limited resources 38.9%	Emergency belief 60.2%; limited hours 54.7%; PHC knowledge 90.7%; PHC nearby 76.7%; PHC has ED 24.8%
Al Jabir et al. [14]	$p < 0.001$	NA	$p = 0.022$	$p = 0.022$	–	No association	Previous ED visit ($p < 0.001$); previous PHCC visit ($p = 0.002$)	Save time 49.3%; earlier appointment 48%; prefer ED 15.8%; ED nearby 14.2%; visiting hospital for other reason 12.3%
Alkhaywani et al. [15]	Age < 30 years ($p<0.001$)	NA ($p = 0.971$)	Saudi nationality ($p = 0.022$)	University educated ($p = 0.022$)	–	Single ($p = 0.002$)	–	Save time 49.3%; earlier appointment 48%; prefer ED 15.8%; ED nearby 14.2%; visiting hospital for other reason 12.3%
Alhojelan et al. [8]	Age 20-34 ($p = 0.0008$); Age 50-64 ($p = 0.001$)	NA	–	College graduates highest rates (30.4%, $p = 0.006$)	–	–	Slow treatment 52.7%; no PHC knowledge 33.9%; request-based 19.4%; discomfort with plan 11.8%; far distance 1.5%; ED superior 1.5%; Saturday closed 1.2%; poor services 0.9%	–
Alghamdi et al. [16]	Age ≥70 less likely (OR = 0.1, $p < 0.0001$)	Male (OR = 1.3, $p < 0.0001$)	Non-Saudi (OR = 2.7, $p < 0.0001$)	–	–	Weekend visits (OR = 1.1, $p = 0.0366$)	–	Pulmonological 39.6%; ENT 4.7%
Alnasser et al. [1]	Older age ($p < 0.001$)	NA	Non-Saudi ($p < 0.001$)	–	–	Married ($p < 0.001$)	–	Routine exam 40.9%; med refill 14.6%; URTI 9.9%; skin/allergy 4.8%; non-specific 4.0%; ENT 3.6%; headache 3.3%; musculoskeletal 3.2%; injury/trauma 2.3%; other infections 2.3%; eye problems 2.1%

Abbreviations: CI, confidence interval; CTAS, Canadian Triage and Acuity Scale; CVD, cardiovascular disease; ED, emergency department; ENT, ear, nose, and throat; GIT, gastrointestinal tract; OR, odds ratio; PHC, primary healthcare; PHCC, primary healthcare center; RTA, road traffic accident; RTI, respiratory tract infection; URTI, upper respiratory tract infection: NA, no association.

In Al-Qassim, Alhojelan et al. [8] reported slow treatment at PHCs (52.7%), lack of knowledge about PHC services (33.9%), and doctors' referral (48.4%) as the most common reasons. In Jeddah, Al-Otmy et al. [3] reported easy accessibility to the ED (26.1%), limited PHC services (19.4%), difficulty obtaining appointments (11.8%), and doctors' referral (3.5%) as notable reasons. Alyasin et al. [9] reported not having a regular healthcare provider (63.4%), perceiving ED care as superior to other available services (44.6%), and access to investigations such as blood tests or X-rays (37.4%) as primary motivators (Table 3).

Risk of bias

Although the overall risk of bias across the included studies was judged to be low to moderate, several methodological concerns identified in the JBI appraisal warrant careful consideration when interpreting the findings.

In the cross-sectional studies (Table 4), issues related to participant sampling were evident, with multiple studies not employing appropriate sampling strategies (Q2). This raises the possibility of selection bias, which may limit the representativeness of the study populations and reduce the generalizability of the findings. In addition, response

Table 4. *JBI critical appraisal checklist (Cross-Sectional Studies).*

JBI question	Alyasin et al. [9]	Bakarman et al. [10]	Dawoud et al. [11]	Siddiqui et al. [12]	Al-Otmy et al. [3]	Almutlaq et al. [13]	Al Jabir et al. [14]	Alkhaywani et al. [15]	Alhojelan et al. [8]
Q1. Was the sample frame appropriate to address the target population?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Q2. Were study participants sampled in an appropriate way?	No	Yes	No	Yes	No	No	Yes	No	Yes
Q3. Was the sample size adequate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q4. Were the study subjects and the setting described in detail?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q5. Was the data analysis conducted with sufficient coverage of the identified sample?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q6. Were valid methods used for the identification of the condition?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q7. Was the condition measured in a standard, reliable way for all participants?	Yes	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes
Q8. Was there appropriate statistical analysis?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Q9. Was the response rate adequate, and if not, was the low response rate managed appropriately?	Yes	Yes	Unclear	Yes	Unclear	Unclear	Unclear	Unclear	Unclear

Abbreviation: JBI, Joanna Briggs Institute.

Table 5. *Quality assessment of Cohort Studies using the JBI critical appraisal tool.*

JBI question	Alnasser et al. [1]	Alghamdi et al. [16]
Q1. Were the two groups similar and recruited from the same population?	Yes	Yes
Q2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	Yes	Yes
Q3. Was the exposure measured in a valid and reliable way?	Yes	Yes
Q4. Were confounding factors identified?	Yes	Yes
Q5. Were strategies to deal with confounding factors stated?	Yes	Yes
Q6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	Yes	Yes
Q7. Were the outcomes measured in a valid and reliable way?	Yes	Yes
Q8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	No	No
Q9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	No	No
Q10. Were strategies to address incomplete follow up utilized?	No	No
Q11. Was appropriate statistical analysis used?	Yes	Yes

Abbreviation: JBI, Joanna Briggs Institute.

rates were frequently reported as unclear (Q9), increasing the risk of non-response bias, where respondents may differ systematically from non-respondents. Furthermore, some studies showed uncertainty regarding the reliability of outcome measurement (Q7), suggesting a potential risk of measurement bias. Although most studies used valid statistical analyses and appropriate measurement tools (Q5, Q6, Q8), these limitations may still influence the accuracy of the reported associations.

For the cohort studies (Table 5), while exposures, outcomes, and confounding factors were generally well identified and measured (Q3-Q7), important limitations were observed in follow up procedures. Specifically, insufficient follow up duration (Q8), incomplete follow up (Q9), and lack of strategies to address missing data (Q10) were consistently reported. These issues introduce a risk of attrition bias and may lead to biased estimates of effect, particularly if loss to follow up is related to both exposure and outcome.

Taken together, these methodological limitations reduce the overall confidence in the evidence. While the consistency of findings across studies may support general trends, the presence of selection bias, non-response bias, measurement bias, and attrition bias suggests that the results should be interpreted with caution. These limitations may also affect the magnitude and direction of the reported associations, potentially leading to overestimation or underestimation of true effects.

Discussion

This systematic review found that non-urgent visits represent a substantial proportion of ED utilization in Saudi Arabia, with prevalence ranging from 20.7% to 82.4% and a mean of approximately 50%. The most frequently reported reasons for non-urgent ED attendance included dissatisfaction with outpatient services, difficulty obtaining appointments, and patient preference for faster or perceived higher-quality care in the ED. Younger adults and pediatric patients were most commonly represented. Collectively, these findings support the study aim and indicate that both healthcare system barriers and patient decision-making contribute to the persistent burden of non-urgent ED use in Saudi Arabia.

The median proportion of non-urgent ED visits in Saudi Arabia was56.75% indicating a substantial burden across studies. This variability likely reflects differences in triage systems, study populations, and healthcare settings. However, a major limitation of the included studies is the substantial heterogeneity in the operational definitions of non-urgent emergency department visits. Definitions varied widely across studies, including standardized triage systems (CTAS, ESI), local triage criteria, behavioral definitions such as self-referral, and appropriateness-based classifications, which significantly limits comparability across studies. The highest prevalence reported in Buraidah (82.4%). In comparison, a U.S. systematic review reported a mean prevalence of 37% (range 8%-62%) [2], and reports from France estimated 20% to 40% [6], suggesting a lower burden than in Saudi Arabia. Age patterns also differed across settings. In Saudi Arabia, young adults (<30 years) and children comprised the majority of non-urgent ED users, whereas a study from France reported a mean age of 38.3 years [6]. Findings from South Africa and Korea similarly indicated higher utilization among young adults [5,17]. In France and South Africa, men accounted for a slightly higher proportion of non-urgent ED visits than women (54.6% and 60.1%, respectively) [5,6]. However, despite these differences, sex was not a strong or consistent predictor of non-urgent ED visits.

Educational attainment showed inconsistent associations across countries: in Saudi Arabia, higher educational attainment was associated with non-urgent ED visits, whereas a U.S. review linked lower education with higher use [2]. Access to primary healthcare was a consistent driver across settings. In Saudi Arabia, limited working hours and the absence of a regular provider were frequently associated with non-urgent ED use, consistent with findings from the U.S. [2] and France [6]. In Japan, patients often attended out-of-hours ED services for minor concerns despite having a primary care physician, suggesting that availability alone may not be sufficient to reduce non-urgent ED use [18]. Timing also appeared to influence attendance patterns. In Saudi Arabia, weekend visits were common, while in Korea and Japan, visits peaked during evening and nighttime hours [17,18]. Together, these findings highlight ongoing international challenges related to access to primary care and patient decision-making that contribute to non-urgent ED utilization.

Non-urgent ED visits place a significant strain on emergency services by increasing patient volume, prolonging waiting times, and potentially delaying care for individuals with time-sensitive emergencies. In Saudi Arabia, the available evidence suggests that non-urgent ED use is associated with limited access to primary healthcare, reduced continuity of care, and the perception that ED services provide faster or more reliable care. Emergency services are intended to prioritize acute and life-threatening conditions, supported by effective triage systems, accessible primary care, and public awareness of appropriate care pathways. The high proportion of non-urgent ED attendance in Saudi Arabia, therefore, indicates a gap between current practice and this goal and underscores the need to preserve ED capacity for patients with urgent needs.

Limitations

This systematic review has several limitations. First, most included studies used cross-sectional designs, which limits causal inference regarding factors associated with non-urgent ED visits. Second, substantial heterogeneity across studies prevented quantitative pooling. Definitions of “non-urgent” varied by triage system (eg, the CTAS, the ESI, or local criteria), which may be affected by recall and social desirability bias. This variability in the operational definition of non-urgent visits significantly limits comparability across studies and represents a key methodological limitation of this review.

Third, outcome reporting was inconsistent, and effect estimates were infrequently reported; cross-tabulations (2×2) were generally unavailable, which limited comparative analysis and reduced the ability to explore potential effect modifiers.

Fourth, regional representation across Saudi Arabia was uneven, and several studies were conducted at single centers, which may limit generalizability to other settings and healthcare systems within the Kingdom. Fifth, we included only studies published in English and did not systematically search grey literature or unpublished sources, which may have resulted in incomplete capture of relevant evidence and introduced publication and language bias. Finally, although methodological quality was generally low to moderate risk of bias, several studies provided limited information on response rates, sample size justification, confounding control, and handling of missing data, which may affect the reliability of reported associations.

Conclusion

This systematic review shows that non-urgent visits comprise a substantial proportion of ED utilization in Saudi Arabia. The primary contributing factors include limited access to primary healthcare, patient preferences, and concerns regarding service quality. High rates of non-urgent ED attendance contribute to overcrowding, inefficient use of resources, and delays in care for patients with urgent conditions. Reducing non-urgent ED utilization will likely require strengthening access to high-quality primary care, improving community awareness of appropriate care pathways, and supporting effective triage systems. These measures are essential to improve the efficiency and safety of emergency care in Saudi Arabia.

Lists of abbreviations

CI	confidence interval
CTAS	Canadian Triage and Acuity Scale
ED	emergency department
ESI	Emergency Severity Index
JBI	Joanna Briggs Institute
N/A	not applicable/not available
OR	odds ratio
PHC	primary healthcare
PRISMA-P	Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols

Conflict of Interests

The authors declare no conflicts of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Consent for participate

Not required.

Consent for publication

All authors consent to the publication of this manuscript.

Ethical Approval

Not required.

Author details

Emtenan M. Bukhari[1], Mohammed A. Almohammadi[2], Mona S. Buraysali[3], Ghalyah T. Kerdawi[3], Abdullah A. Aljazaeri[3], Hussam A. Alzahrani[4], Omar M. Alsuwat[4], Wefag J. Sawadi[3], Mohammed A. Albokhari[5]

1. College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia
2. College of Medicine, Taibah University, Medina, Saudi Arabia
3. College of Medicine, Umm Al-qura University, Makkah, Saudi Arabia
4. College of Medicine, Taif University, Taif, Saudi Arabia
5. Department of Emergency Medicine, Ministry of National Guard Health Affairs, Jeddah, Saudi Arabia

References

1. Alnasser S, Alharbi M, Aalibrahim A, Aal Ibrahim A, Kentab O, Alassaf W, et al. Analysis of emergency department use by non-urgent patients and their visit characteristics at an academic center. Int J Gen Med. 2023;16:221–32. https://doi.org/10.2147/IJGM.S391126
2. 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(1):47–59.
3. Al-Otmy SS, Abduljabbar AZ, Al-Raddadi RM, Farahat F. Factors associated with non-urgent visits to the emergency department in a tertiary care centre, western Saudi Arabia: cross-sectional study. BMJ Open. 2020;10(10):35951. https://doi.org/10.1136/bmjopen-2019-035951
4. Pather M, Mash R, Van Hoving DJ. Non-urgent patients in emergency centres in Western Cape district health services. South Afr Fam Pract. 2025;67(1):6116. https://doi.org/10.4102/safp.v67i1.6116
5. Fagbiye AA, Egenasi CK, Steinberg WJ, Benedict MO, Habib T, Van Rooyen FC. Characteristics and reasons non-urgent self-referred patients visit the emergency department in Kimberley, South Africa. Health SA Gesondheid. 2025;30:1–7. https://doi.org/10.4102/hsag.v30i0.3015
6. Durand AC, Palazzolo S, Tanti-Hardouin N, Gerbeaux P, Sambuc R, Gentile S. Nonurgent patients in emergency departments: rational or irresponsible consumers? perceptions of professionals and patients. BMC Res Notes. 2012;5:525. https://doi.org/10.1186/1756-0500-5-525
7. Dundar C, Yaylaoglu SD. Non-emergent care visits in a Turkish tertiary care emergency department after 2008 health policy changes: review and analysis. Arch Public Health. 2022;80(1):31. https://doi.org/10.1186/s13690-022-00787-5
8. Alhojelan AM, Al Rusayni YA, Alsaif E, Aldoubiab RK, Aloqla A, Aloraini AA, et al. Analyzing non-urgent emergency department visits: patterns, demographics, motivations, and triage system awareness in Al-Qassim. Cureus. 2024;16(4):e58383. https://doi.org/10.7759/cureus.58383
9. Alyasin A, Douglas C. Reasons for non-urgent presentations to the emergency department in Saudi Arabia. Int Emerg Nurs. 2014;22(4):220–5. https://doi.org/10.1016/j.ienj.2014.03.001
10. Bakarman MA, Al-Ghamdi S. Assessment of non-emergency cases attending emergency department

at King Fahad General Hospital, Jeddah; pattern and outcomes. Life Sci J. 2014;11(8):20–5.

11. Dawoud SO, Ahmad AM, Alsharqi OZ, Al-Raddadi RM. Utilization of the emergency department and predicting factors associated with its use at the Saudi Ministry of Health general hospitals. Glob J Health Sci. 2015;8(1):90–106. https://doi.org/10.5539/gjhs.v8n1p90

12. Siddiqui S, Ogbeide DO. Use of a hospital-based accident and emergency unit by children (0-12 years) in Alkharj, Saudi Arabia. Ann Trop Paediatr. 2002;22(1):101–5. https://doi.org/10.1179/027249302125000256

13. Almutlaq M, Alsuliman Y. Prevalence and factors associated with attendance of non-urgent cases of pediatric emergency room in Riyadh, Saudi Arabia. J Pharm Res Int. 2021;33(41B):316–20.

14. Al Jabir A, Alshahrani A, AlQahtani A, Alshahrani A, AlQahtani F, Al-Qahtani M, et al. Non-urgent pediatric presentations to the emergency department, Khamis Mushayt Maternity and Children hospital, Saudi Arabia. World Fam Med. 2023;21(8):87–97. https://doi.org/10.5742/MEWFM.2023.95256183

15. Alkhaywani FH, Alsalah AYA, Alsalah HYA, Al-Khaiwani AMY, Alqanas TH, Almurdef AN, et al. Patient's perspective for their non-urgent presentations to the emergency department in Najran city. World Fam Med. 2023;21(11):6–15. https://doi.org/10.5742/mewfm.2023.95256218

16. Alghamdi AM, Alqazenli MK, Alzahrani MI, Bin Khamis NA, Al Yusuf GA, Alaithan TM, et al. Inappropriate emergency department visits: insights on incidence, associated, and predictive factors from 5,429 visits. Cureus. 2024;16(7):e65091. https://doi.org/10.7759/cureus.65091

17. Yoo HH, Ro YS, Ko E, Lee JH, Han SH, Kim T, et al. Epidemiologic trends of patients who visited nationwide emergency departments: a report from the National Emergency Department Information System (NEDIS) of Korea, 2018-2022. Clin Exp Emerg Med. 2023;10(S):S1–2. https://doi.org/10.15441/ceem.23.151

18. Miyazawa A, Maeno T, Shaku F, Tsutsumi M, Kurihara H, Takayashiki A, et al. Inappropriate use of the emergency department for nonurgent conditions: patient characteristics and associated factors at a Japanese hospital. J Gen Fam Med. 2019;20(4):146–53. https://doi.org/10.1002/jgf2.249