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Emergency nurses' triage narrative data, their uses and structure: a scoping review protocol

Christopher Thomas Picard ,[1,2] Manal Kleib,[1] Hannah M O'Rourke,[1] Colleen M Norris,[1,3] Matthew J Douma[4,5]

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[1]Faculty of Nursing, University of Alberta, Edmonton, Alberta, Canada
[2]Royal Alexandra Hospital, Emergency, Alberta Health Services, Edmonton, Alberta, Canada
[3]School of Public Health, University of Alberta, Edmonton, Alberta, Canada
[4]Department of Critical Care Medicine, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada
[5]School of Nursing, Midwifery and Health Systems, University College Dublin, Dublin, Ireland

Correspondence to
Christopher Thomas Picard; picard.ct@gmail.com

ABSTRACT

Introduction The first clinical interaction most patients have in the emergency department occurs during triage. An unstructured narrative is generated during triage and is the first source of in-hospital documentation. These narratives capture the patient's reported reason for the visit and the initial assessment and offer significantly more nuanced descriptions of the patient's complaints than fixed field data. Previous research demonstrated these data are useful for predicting important clinical outcomes. Previous reviews examined these narratives in combination or isolation with other free-text sources, but used restricted searches and are becoming outdated. Furthermore, there are no reviews focused solely on nurses' (the primary collectors of these data) narratives.

Methods and analysis Using the Arksey and O'Malley scoping review framework and PRISMA-ScR reporting guidelines, we will perform structured searches of CINAHL, Ovid MEDLINE, ProQuest Central, Ovid Embase and Cochrane Library (via Wiley). Additionally, we will forward citation searches of all included studies. No geographical or study design exclusion criteria will be used. Studies examining disaster triage, published before 1990, and non-English language literature will be excluded. Data will be managed using online management tools; extracted data will be independently confirmed by a separate reviewer using prepiloted extraction forms. Cohen's kappa will be used to examine inter-rater agreement on pilot and final screening. Quantitative data will be expressed using measures of range and central tendency, counts, proportions and percentages, as appropriate. Qualitative data will be narrative summaries of the authors' primary findings.

Patient and public involvement No patients involved.

Ethics and dissemination No ethics approval is required. Findings will be submitted to peer-reviewed conferences and journals. Results will be disseminated using individual and institutional social media platforms.

Strengths and limitations of this study

- Because of advancements in artificial intelligence, an increasing number of studies have analysed unstructured narrative data, and artificial intelligence has been formally incorporated into clinical triage nursing software.
- This scoping review will offer an update to previously performed systematic and scoping reviews of unstructured narratives.
- This scoping review will use a search strategy that is more comprehensive than previous systematic reviews that examined unstructured triage narratives for specific clinical presentations.
- This will be the first scoping review to examine unstructured triage nurse narratives and will identify opportunities for additional review or meta-analysis.
- This review will be limited to English language studies and may not capture all studies in the field.

INTRODUCTION

The first interaction most patients will have with a care provider in the emergency department (ED) typically occurs during triage. A nurse will conduct a brief patient assessment, record demographical information and assign a visit code and acuity level.[1] The decisions nurses make during this triaging process are used to stream patients into different parts of the department and ensure they do not deteriorate if medical care is delayed.[1] The triage process originated in battlefield hospitals during the Napoleonic wars,[2] but did not see widespread incorporation into healthcare until the 1960s,[3] a formal taxonomic approach until the 1980s,[4] or national implementation until 1994, when Australia became the first country to do so.[5] Most countries now use both formalised triage processes and validated triage tools,[1] with many systems basing their model on the Australian system.[1 6]

Because triage is typically the first clinical encounter for most patients, the triage record is the first source of in-hospital documentation. In some jurisdictions (such as Canada), national standards guide both the triage process and ED data collection,[7 8] and the vast majority (85%) of EDs collect and report minimum data sets to a national repository.[9–11] These minimum data sets help administrators assess workload trends, compare costs, measure throughput, monitor patient acuity

and perform pandemic surveillance.[12] Minimum data sets require documentation of a set amount of structured data, but also allow for the optional reporting of significantly more data, such as triage narratives. Despite their routine collection in some jurisdictions, these narratives are not part of the 'minimum' data set,[11 13 14] and until recently have not been used in a consistent manner.

Unstructured triage narratives differ from structured data in that they are not restricted to one of several fixed options. These narratives capture subjective data such as the patient's own reported reason for visiting the ED and the nurse's assessment; and, as such, offer significantly more nuance than an itemised 'presenting complaint', or procedural or diagnostic codes. While unstructured data have historically been difficult to use, recent advances in artificial intelligence (AI) have been applied to rapidly assess large volumes of triage narratives with strategies including natural language processing,[15] computerised keyword searches[16] and computer-aided expert analysis.[17] The results of previous studies suggest that narrative data can be useful for predicting important clinical outcomes such as the need for admission to hospital[18] or receiving a diagnosis of sepsis[19] or influenza.[17] In addition to being predictive of clinical course, narrative data have been used for epidemiological purposes such as tracking characteristics and rates of injury[20] and substance misuse patterns.[21 22] Furthermore, when triage narratives have been added to more traditional approaches for estimating disease prevalence (ie, International Classification of Disease—ICD codes), they have been able to identify significantly more cases,[21 22] with one study showing that triage narratives can more than quadruple (90% vs 21%) the number of cases (road collisions involving drugs or alcohol) identified when compared with ICD codes alone.[21] The ability to identify cases is of particular importance for rare or complex presentations that are not easily captured using existing diagnostic codes.[16] These triage narratives have been clinically operationalised by the Emergency Nurses Association, which incorporated AI into triage decision support.[23] The clinical implementation of AI into triage suggests that the research field is poised to expand significantly, and as such a mapping of the current literature base is needed.

To date, at least three systematic reviews have included triage narratives in their examinations of unstructured clinical data. Two systematic reviews (an initial review[24] and subsequent update[25] authored by the same group) identified 56 papers examining AI approaches to analysing injury surveillance narratives. The reviews included studies that assessed narrative data from any source and any administrative health database, provided that it was assessed using AI algorithms. The reviews included a number of studies that used triage narratives and found that narrative data offered not only an alternative method for performing surveillance, but also offered rich contextual information not otherwise available.[25] A third systematic review, which examined ED syndromic surveillance of influenza, identified 38 studies that tracked illness, several of which used both nursing triage narratives and nurse assigned complaint codes.[26]

More recently there have been scoping reviews of AI that have examined their use in aiding in medical diagnoses[27] and for clinical decision support.[28] Both reviews examined triage and unstructured narratives data, but they included these with disparate types of data. Additionally, neither study referenced the previously mentioned systematic reviews, and both missed a significant number of studies identified in the systematic reviews that examined AI. Some of these omissions may have been intentional given that one review excluded studies that were linked to specific presentations (such as influenza, chest pain or trauma)[28] or because the other review included only those that explicitly mentioned the use of synonyms for 'artificial intelligence' in their title, were not directly relevant to medicine (eg, public health) or 'did not report outcomes or evaluations' (eg, non-intervention epidemiological studies).[27]

These reviews are foundational and our work will attempt to add to them. The systematic reviews suggest that there is limited use in examining narrative data in general, concluding that a 'lack of guidelines for recording information… and subsequent inconsistencies in the documentation'[24] complicate the use of the data. These conclusions may be either a reflection of the limitations present in AI at the time, or the result of generalising about the ability of narrative data to reflect more narrowly defined and specific presentations (eg, injuries or communicable diseases). The authors of the systematic review limited their searches by excluding grey literature[24 25] and examining only studies indexed on PubMed.[26] The scoping reviews, while more current, have limited their search breadth by using restrictive search strategies that exclude studies linked to specific presentations. Our work will add to other scoping reviews that have examined triage narratives as part of their data; but will offer an updated overview of the early systematic reviews, and will focus on examining the clinical, epidemiological and prognostic value of the narrative data generated by the clinicians who are pushing to incorporate AI into the very earliest stages of clinical documentation: emergency nurses.

Objective

Using the Arksey and O'Malley[29] scoping review framework and PRISMA-ScR[30] reporting guidelines, the goal of our review will be to identify, map and describe the peer-reviewed literature examining nursing triage narratives in order to identify if there is sufficient literature to conduct future systematic reviews on the use of triage narratives for estimating prevalence for other conditions and populations, the use of AI at triage and to determine whether there is sufficient literature to meta-analyse comparisons of prevalence estimates using narratives and other coding sources. To further these goals, we will focus on the following objectives:

1. To describe the populations and locations where the data originated.
2. To determine the types of literature that have been generated on the topic.
3. To describe the authors' reported purpose and conclusion in the literature.

METHODS AND ANALYSIS

Search strategy

The review will be conducted between February and May 2022. We will identify relevant literature through structured searching of online databases and forward citation searches of included studies. With the assistance of a medical librarian, our review will use controlled vocabulary (online supplemental appendix 1) to perform a comprehensive search of the following databases: CINAHL, Ovid MEDLINE, Ovid Embase, Cochrane Library (via Wiley) and ProQuest Central. Because of the long history of triage and the potentially disparate systems that existed prior to national standardisation, the search will be limited to studies published after 1990, 4 years prior to the implementation of the first nationally recognised triage system.[5]

Inclusion and exclusion criteria

In order to be included in this review, identified literature will need to meet all of the following inclusion criteria:

Setting

The literature must address triage that occurs in an ED. Although many services will perform triage to determine who needs care first, the focus of our review is on the narratives generated by triage nurses working in EDs. Emergency care can occur in hospital-based EDs, freestanding EDs and urgent care centres; which can be referred to in a number of ways: emergency room, urgent care centre, accident and emergency, emergency ward and casualty station.[31]

Narrative data

Included literature must assess triage narratives. These are data that are not collected in a categorical manner; they are in a narrative free form. These can be viewed as analogous to a 'chart note'.[32] There are multiple phrases used for this; the most commonly used terms are 'summary', 'narrative', 'free-text or text', 'presenting complaint', 'syndrome or symptom' or 'unstructured description(s)'.[24]

Primary population

Because the primary population of interest is nurses, only narratives generated by nurses will be included. To maintain maximum sensitivity, we define a nurse as someone 'authorised by the appropriate regulatory authority to practice nursing',[33] regardless of their registered title, for example, registered nurses, nurse practitioners, midwife, psychiatric nurses or practical registered nurses.

Study type

Any peer-reviewed primary literature identified in the search will be included, regardless of design. Reviews, commentaries, conference proceedings and results available in abstract form only will not be included.

Language and full-text availability

Only English language literature will be included. Literature will be excluded for any of the following reasons:

Disaster specific triage tools

There are a number of different triage tools used during disasters. Triage in these settings is predicated on speed,[34] and does not typically include either a detailed assessment of the patients nor an unstructured narrative of the assessment. As such they will be excluded from this review.

Providers other than nurses

There are other healthcare providers who may perform triage, for example, paramedics. While there may be some concordance between different healthcare providers,[35 36] only nurse-generated narratives will be included in this review to examine a homogenous practice group.

Reference and data management

Literature identified through the structured searches will be loaded into Covidence (Veritas Health Innovation) where duplicates will be removed and screening will occur. Title, abstract and full-text screening will be performed independently by two reviewers using Covidence and will be guided by prepiloted screening forms (online supplemental appendix 2). Any disagreements on inclusion will be settled by consensus, or if needed by a tie-breaker from a third researcher. Citations will be managed using Zotero (Corporation for Digital Scholarship). Continuous and categorical data will be extracted into a prebuilt online spreadsheet and word processing programs by the lead researcher and independently confirmed by another using prepiloted extraction guides (online supplemental appendix 3).

Data extraction

Data extraction will be guided by the central objectives of the study.[29] First, to describe the populations involved in the studies, we will extract data related to the location of where the studies are being conducted, the number and types of hospitals and departments being assessed and the numbers and types of patients being assessed. Second, to determine the types of literature that have been generated on the topic of interest and the methods used by each of the studies, we will extract data related to the target populations, research designs and data extraction and hypothesis testing techniques. Finally, we will describe the authors' reported purpose for conducting the study or generating the literature, summary of findings or conclusion and whether any reporting guidelines were followed. The purpose will be defined as the study objectives or rationale, and a summary of the authors' findings and reported conclusion or recommendations. Because

AI-specific reporting guidelines have only recently been published,[37] any reporting guidelines used by the authors will be extracted. The data extraction will be guided by a prepiloted guiding document (online supplemental appendix 3) and will occur in two ways: categorical or continuous data, which will be extracted into an online spreadsheet, and narrative data, which will be extracted into a word processing document (online supplemental appendix 3). Prior to data extraction, a sample of 10 studies will be extracted and compared to assess for agreement between reviewers and to determine if the extraction tool needs revision.

Data synthesis

Data synthesis will aim to map data in a manner that facilitates comparisons and the identification of gaps in the literature.[29] Extracted data will be presented in tabular format to facilitate the summation and comparison of the nature and scope of existing literature to identify promising topics for future systematic reviews aimed to synthesise findings. Quantitative synthesis of continuous variables such as sample sizes will use counts and measures of range and central tendency (mean or median). Categorical data such as year and location of study, the sources of data, approach to data extraction and methods of hypothesis testing will be expressed as counts and percentages, as the authors' reported purpose for conducting the study and as a summary of their findings will be expressed narratively. Although quality appraisal can be performed,[30] it is not typical to include a critical appraisal within a scoping review as the primary aims are to map the nature and features of the literature, not to provide an unbiased assessment of the findings of the body of literature.[29 38] While we chose to present authors' recommendations from the primary studies in this review, we do so to give a broad sense of what research in the area has generated to date, and to identify areas for future systematic reviews, which will synthesise study findings and also appraise the quality of the studies included in the review.[29] We will, however, report on the proportion of studies that follow formal reporting guidelines. Inter-rater agreement on pilot screening criteria and extraction tools and final screening and extraction results will be assessed and using Cohen's kappa. PRISMA ScR criteria (online supplemental appendix 4) will be used for reporting findings.[30]

Patient and Public Involvement

No patients involved.

ETHICS AND DISSEMINATION

Ethics

This study will be examining previously published academic literature and publicly available grey literature, as such there is no requirement for ethical approval.

Dissemination

Findings from this scoping review will be presented in several ways: (1) Findings will be submitted for presentation at local, and national academic and emergency nursing conferences. (2) We will request the opportunity to present the findings from this review to the Canadian Triage Acuity Scale and Canadian Emergency Department Information System National Working Groups. (3) A final manuscript will be submitted to an open access peer-reviewed journal for publication.

Twitter Christopher Thomas Picard @CtPicard

Contributors All authors contributed to the design of this protocol. CTP, MK and HMO initiated the project. The protocol was drafted by CTP and was refined by MK, CN, HMO and MJD. CTP was responsible for drafting the manuscript. All authors contributed to the manuscript. All authors have all read, refined and approved the final manuscript.

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ORCID iD

Christopher Thomas Picard http://orcid.org/0000-0001-9377-3106

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