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Inpatient clinician workload: a scoping review protocol to understand the definition, measurement and impact of non-procedural clinician workloads

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ABSTRACT

Introduction Clinicians that care for hospitalised patients face unprecedented work conditions with exposure to highly infectious disease, exceedingly high patient numbers, and unpredictable work demands, all of which have resulted in increases in stress and burnout. Preliminary studies suggest that increasing workloads negatively affect inpatient clinician well-being and may negatively affect job performance; yet high workloads may be prioritised secondary to financial drivers or from workforce shortages. Despite this, the correlation between workload and these negative outcomes has not been fully quantified. Additionally, there are no clear measures for inpatient clinician workload and no standards to define ideal workloads. Using the protocol described here, we will perform a scoping review of the literature to generate a comprehensive understanding of how clinician workload of medical patients is currently defined, measured in clinical settings and its impact on the workforce, patients and institutional outcomes.

Methods and analysis We will follow the methodology outlined by Joanna Briggs Institute and Arksey and O'Malley to conduct a comprehensive search of major electronic databases including Ovid Medline (PubMed), Embase (Embase.com), PsycINFO, ProQuest Dissertations and Google Scholar. All relevant published peer-reviewed and dissertaion grey literature will be included. Data will be extracted using a standardised form to capture key article information. Results will be presented in a descriptive narrative format.

Ethics and dissemination This review does not require ethics approval though all included studies will be screened to ensure appropriate approval. The synthesis of this literature will provide a better understanding of the current state of work for inpatient clinicians, associated outcomes, and will identify gaps in the literature. These findings will be used in conjunction with an expert Delphi panel to identify measures of inpatient clinician workload to then guide the development of a novel workforce mobile application to actively track clinician work. We aim to lay the groundwork for future workforce studies to understand the optimal workloads that drive key outcomes for clinicians, patients and institutions.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This scoping review will be performed in accordance with the Joanna Briggs Institute, Arksey and O'Malley and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews checklist to ensure rigorous methodology and reporting.
⇒ Our extensive search of the literature will include all published peer-reviewed and dissertation grey literature to provide a comprehensive overview of current research available in our area of interest.
⇒ We will include studies involving non-procedural clinicians including physicians and advanced practice providers that work in inpatient and outpatient settings to ensure our results include information from various clinical settings.
⇒ Differences between non-procedural clinical workload in the outpatient and inpatient settings may be difficult to reconcile given known dissimilarities in work performed between these two settings.
⇒ As part of a scoping review, we will not be evaluating the quality of the studies included, which may affect the quality of our results.

INTRODUCTION

Clinicians who care for medical patients in the hospital setting (sometimes referred to as 'hospitalists'[1–3] and for this protocol, will be referred to as inpatient clinicians) represent physicians and advanced practice providers (APPs) that increasingly provide inpatient care to patients hospitalised across the globe.[1–4] This workforce has faced unprecedented work conditions,[5–7] frequent exposures to a highly infectious disease,[6 8] exceedingly high patient numbers[6–8] and unpredictable work demands,[5–7] all of which have resulted in increases in stress, anxiety, overwork and burnout.[9–13] These challenges, although intensified by the pandemic,[11 14] are not new to inpatient clinicians.[7 15] The most frequently cited factors for burnout for inpatient

clinicians are related to workloads including high patient-to-clinician ratios (ie, number of patients cared for in a day by a clinician) with increasingly complex patients and impractical workloads.[16] Recent studies have highlighted the effects of workload on burnout[7] and job performance[17] for inpatient clinicians. Research suggests that high workloads in the inpatient setting (often measured through number of patient visits) contribute to increased hospital length of stay,[18] delayed discharges,[17] increased costs,[18 19] negatively impact quality improvement efforts[20] and mismatches in job demands and job resources[21] which can lead to inpatient clinician burnout.[7 16]

While there has been much work in the nursing field around workloads,[22] the review and summation of literature around inpatient non-procedural clinician workload, specifically those caring for medical patients, is lacking. Current measures of workload in the US have included encounters and work relative value units (wRVUs)[18 23 24]; however, they do not take into account non-wRVU generating tasks, cognitive load or other factors, which likely underestimates total work.[25]

There is a need to define, measure and understand the impact of inpatient clinician workloads so that institutions can strategically develop staffing models to drive outcomes that benefit the workforce, patients and institutional outcomes. There are limited ways to measure workload in healthcare settings and there are no standards on what an ideal workload may be for non-procedural inpatient clinicians. A scoping review of the literature will generate a comprehensive synthesis of the research that exists regarding how clinician work is currently defined and measured, as well as its effects on clinicians, patients and the hospital system. This work will use literature from both the inpatient and outpatient settings given that work may be measured in similar ways and there may be synergist learnings from the different care environments. This work will begin to bridge research with practice as we embark on creating frameworks for ideal work standards in the inpatient setting that drive worker, patient and institutional outcomes.

METHODS AND ANALYSIS

Protocol

Using the methodology outlined by the Joanna Briggs Institute,[26] Arksey and O'Malley[27] and the PRISMA-ScR checklist,[28] this scoping review will broadly survey the literature that exists regarding measures of workload, which may include number of patients cared for, task load, cognitive load, complexity of patients, or other measures of workload. We will identify the literature that exists regarding both inpatient and outpatient clinician workload (including those that work in non-procedural medical specialties such as hospitalists, general internal medicine, and primary care clinicians). We will seek to understand how workload is defined and measured, the effects of workload on the workforce (including physicians and APPs), patients and institutions, and the existing gaps in the literature. The multidisciplinary review team includes frontline hospitalists, hospital medicine leadership, trainees, a biomedical librarian, and data/analytics specialists. The planned study start date is 8 July 2022 and projected end date is 31 August 2023.

Patient and public involvement

There was no patient or public involvement in developing or the carrying out of this study protocol.

Research question

How is workload defined and measured for non-procedural clinicians that provide medical care across clinical settings (inpatient and outpatient) and what is the impact of workload on the workforce, patients and institutions?

Subquestions

- How is non-procedural clinician workload defined across clinical settings (inpatient and outpatient)?
- What are the primary qualitative and quantitative methods used to measure and evaluate clinician workload?
- How do workload measures vary between different clinical settings?
- How does clinician workload affect the workforce?
- How does clinician workload affect patient outcomes?
- How are ideal workloads defined?
- What financial impact does clinician workload have on hospital systems?
- What gaps exist in the literature regarding non-procedural clinician workload?

Search strategy

Using an iterative strategy, we will first conduct a limited search of Ovid Medline (PubMed) to identify a sample of exemplar publications from which we can harvest terms and against which to test our final strategy to ensure key articles are identified in our final search. These key pieces will be hand-searched for novel search terms, and reference lists will be reviewed to identify additional relevant papers and potential search terms prior to completing the final search.

Next, with the help of a health science research librarian to ensure key population and inclusion and exclusion terms to optimise search results, we will develop the final, comprehensive search strategy and list of refined search terms. The proposed search strategy and key term are outlined in box 1 and will be tailored for each database. We will use Ovid Medline (PubMed), Embase (Embase.com), PsycINFO, ProQuest Dissertations and Google Scholar to identify peer-reviewed and dissertation grey literature that relates to our topic and will consider all quantitative, qualitative, mixed method and systematic reviews on our topic. We will also search key websites of interest (ie, The Hospitalist, Today's Hospitalist, ACP Hospitalist and The Forum), governmental agencies, and health policy think tanks via Google to find additional grey literature applicable to our search.

Box 1 Proposed search strategy to search Ovid Medline (PubMed)

1. (((task or cognitive) adj3 load*) or ((patient* or hospital* or unit* or department* or clinician* or provider*) adj (volume* or encounter* or census)) or relative value unit* or rvu* or wRVU* or productivity or efficienc* or workload* or work load*).tw,kf. or Workload/ or Efficiency/
2. (hospitalist* or general practitioner* or primary care physician* or internal medicine).tw,kf. or hospitalists/ or general practitioners/
3. 1 and 2
4. Ensure inclusion of 13 key articles
5. 4 not 3

Using predefined inclusion and exclusion criteria (table 1), each study title and abstract will be evaluated for inclusion by two reviewers independently using Covidence review software. To increase consistency prior to screening all citations, a sample of publications will be reviewed, eligibility discussed and screening criteria for inclusion revised. If disagreement regarding study inclusion between reviewers arises, a third reviewer will determine eligibility for inclusion. Using this random sample of the included articles, a Cohen's kappa will be calculated to assess inter-rater agreement. If agreement is less than 75%, the review strategy will be adapted and conducted again to ensure rigour and replication.

The number of studies excluded and the reason for exclusion will be tracked for auditing and reporting purposes. All articles that survive title and abstract review will undergo full-text review to determine if they should be included in the analysis.

Inclusion/exclusion criteria

We will include studies written in English from peer-reviewed and grey literature without date limitations. Literature that specifically addresses measures of and outcomes related to non-procedural clinician workload in the medical (non-surgical) inpatient and outpatient environment (including hospitalist and general internal medicine) will be included (table 1). Articles related to workload in relation to nursing, other medical professions, resident physicians or non-medical staff will be excluded.

Data extraction

A standardised extraction template will be created and published within Covidence,[29] a tool designed by researchers to facilitate systematic reviews, standardisation of article screening, data abstraction and quality assessment. The Covidence template will be used to capture key publication information including title, authors, publication status, year published, country of origin, study design, population and study size. During the review of each included publication or article, the concepts, terms and definitions used to describe clinician workload, metrics used to measure clinician workload, and the interventions and outcomes described in relation to clinician workload will be extracted and recorded in the template. We will verify concordance between reviewers with a random sample of articles prior to starting data extraction from all identified literature.

Analysis of evidence

In accordance with the PRISMA-ScR checklist,[28] a flow chart will be produced detailing the numbers for articles screened, articles assessed for eligibility, and articles included in the review, with reasons for exclusions at each step. Characteristics and results from each article included will be tabulated and an inventory of qualitative and quantitative clinician workload measures will be generated. Results will be synthesised to identify overarching themes regarding clinician workload, opportunities and gaps in the literature. Quality of qualitative and quantitative clinician workload measures will be appraised using the relevant Joanna Briggs Institute guidelines, with specific attention on the relevance, validity and reliability.

Presentations of results

We will present our results in a descriptive narrative format. Definitions, measures and expectations of clinician workload will be compared. Relevant outcomes described in the literature will be represented graphically to better depict the connections between amount of work and relevant outcomes. The final review will include the full PRISMA-ScR checklist[28] of essential reporting items.

Table 1 Inclusion and exclusion criteria

Category	Inclusion criteria	Exclusion criteria
Population	Medical (non-surgical, non-procedural) clinicians (physicians, advanced practice providers)	Nurses, physical therapy, respiratory therapy, staff, patients, resident physicians
Context	Inpatient and outpatient setting. Medical (non-procedural) clinicians	Surgical, procedural-based clinicians
Situation	Clinicians caring for patients in hospital and outpatient setting (including inpatient, general internal medicine and clinics)	Operating rooms, procedural-based care, emergency room, urgent care
Source	Peer-reviewed, non-peer reviewed, grey literature including quantitative, qualitative and systematic reviews	Books, conference proceedings, guidelines, trial registrations, international agencies
Publication Year	No date limits	None
Language	English	All other languages

Ethics and dissemination

This review does not require ethics approval though all included studies will be screened to ensure appropriate approval. The synthesis of this literature will provide a better understanding of the current state of work (ie, definitions of workload, how it is measured), associated outcomes and will identify gaps in the literature. These findings will be used in conjunction with an expert Delphi panel to identify measures of inpatient clinician workload to then guide the development of a novel workforce mobile application to actively track clinician work. These measures will guide our focus in the development of this mobile application that can be used to track daily task load for clinicians and better understand the current state for those practising inpatient medicine.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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