Effectiveness of Knowledge Translation Strategies on Organisational Culture and Patient Outcomes: A Systematic Review

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Abstract

**Background:** Knowledge Translation (KT) Frameworks are commonly used in healthcare settings to integrate evidence into practice. However, little is known about how these KT frameworks affect organisational change including culture and patient safety outcomes in healthcare settings.

**Methods:** A systematic review was undertaken. Five databases: PubMed, CINAHL, Scopus, ProQuest and Web of Science were searched with publications screened from January 2016 – July 2021. A blinded screening process was undertaken by all authors and conflicts resolved through open discussion. The Mixed Methods Appraisal Tool (MMAT) was used for quality appraisal.

**Results:** Database search yielded a total of 1498 results, with only four studies included for data extraction and narrative synthesis. Three studies reported on patient safety outcomes, using Translational Simulation, Comprehensive Unit-based Safety Program (CUSP)/ Translating Research Into Practice (TRIP) model and the Consolidated Framework for Implementation Research (CFIR) framework. Only one study reported on organisational culture and used the Best-Practice Spotlight Organization (BPSO) Program. Factors that inhibited successful KT framework implementation relate to organisational and workforce issues such as staff attrition and secondments, staff not being released for education and an absence of commitment to the program at the executive level. Establishing and maintaining effective lines of communication and transparent reporting resulted in successful implementation outcomes.

**Conclusion:** Various KT frameworks and strategies are used across healthcare settings to guide the development and evaluation of implementation projects and quality improvement initiatives. However, the impact of knowledge translation strategies on organisational culture and patient outcomes remains unclear, poorly described and under researched. Future research needs to be undertaken to explore the barriers and facilitators of knowledge translation processes and its impact on organisational change, culture and patient safety outcomes.

**Protocol Registration:** This review was registered with the international prospective register of systematic reviews (PROSPERO), ID: CRD42021265470 on 02/07/21. The design and methods used for this systematic review will be informed by and comply with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2015).

**Contribution To The Literature**

- Knowledge translation (KT) strategies provide established theoretical frameworks for examining and changing clinicians’ behaviour, narrowing the evidence-practice gap. Our study reports characteristics of KT frameworks used to affect organisational outcomes across the health sector.
- Successful implementation outcomes are achieved when stakeholders at the individual, team and organisational levels are engaged, effective lines of communication are established and maintained, and transparent reporting occurs.
- Despite hundreds of studies reporting on KT framework utilisation, a paucity of research reports the organisational outcomes. Therefore, the impact of knowledge translation strategies on organisational culture and patient outcomes remains unclear, poorly described and under researched.

**Background**

The emergence of the evidence-based knowledge paradigm in the 1970s witnessed the growth of appraising and judiciously applying research evidence to provide quality care and improve patient outcomes (Damarell & Tieman, 2017). The importance of evidence-based practice and its role in advancing knowledge and improving the quality and safety of care is well established (ACSQHC, 2017; Curtis, Fry, Shaban, & Considine, 2017). Despite this important aim, evidence is not always utilised (I. D. Graham et al., 2006). Although research knowledge is being produced at a growing rate, translating this knowledge into clinical practice lags behind. One of the most consistent findings from clinical healthcare research is the failure to translate research findings and it is frequently cited that it takes an average of 17 years for research evidence to be translated into
clinical practice (Morris, Wooding, & Grant, 2011). Numerous examples in the literature confirm that this lag in translation causes a significant economic burden and negatively impacts patient safety and outcomes (Graham, Kothari, & McCutcheon, 2018; I. D. Graham et al., 2006; Khoddam et al., 2014; Pronovost, Berenholtz, & Needham, 2008).

The use of Early Warning Systems is a well-documented example of knowledge translation failure. Early Warning Systems (EWS) were designed to aid clinicians to recognise clinical deterioration, and yet, 80% of serious adverse events in public hospitals remain preventable and almost 14% of deteriorating patients are not appropriately treated (Shearer et al., 2012). Considering that non-compliance with EWS persists despite the existence of evidence confirming the efficacy of EWS to identify clinical deterioration (Dwyer et al., 2019), it is obvious that a gap exists between best evidence and practice. While staff education addresses a component around failure to comply (Weston & Hoopes, 2021), sustained behavioural change is clearly not occurring (Burke, Downey, & Almoudaris, 2020).

Knowledge translation (KT) provides an established theoretical framework for examining and changing clinicians’ behaviour in practice and is showing promise in closing this evidence-practice gap (Esmail et al., 2020; Graham et al., 2018; Kitson et al., 2018). However, despite the plethora of KT frameworks mentioned in the literature, there is a paucity of evidence regarding outcomes that affect organisational cultural change within a hospital setting. In particular, there appears to be a dearth of information regarding the organisational change that results in improved patient outcomes after KT implementation. Therefore, our review sets out to develop an understanding of the characteristics and components of KT strategies that have affected organisational change.

**Review**

**Aim**

Develop an understanding of the characteristics and components of KT strategies that have affected organisational change.

**Review questions:**

1. What are the characteristics and components of knowledge translation strategies that have affected organisational change?

2. What outcome measures (e.g. organisational culture, patient safety, patient experience) were evaluated?

**Objectives**

We systematically reviewed the literature for publications reporting on the evaluation of knowledge translation frameworks that have been implemented in healthcare settings. We propose to use findings from this systematic review to inform the development of a knowledge translation strategy, that once embedded, will guide and support a sustainable change in clinicians’ practice towards proactive compliance with Clinical Practice Guidelines, thus improving patient outcomes.

**Methods**

**Eligibility criteria**

This study utilised the Problem, Intervention and Context (PICO) (Richardson, Wilson, Nishikawa, & Hayward, 1995) framework to develop the research question (see table 1). The PICO framework facilitated the construction of several domains designed to effectively guide our literature search. We used an iterative process that included all team members (TF, AS, DM, CT) to populate each of the search domains. An experienced healthcare facility librarian was consulted to provide feedback throughout the generation of our search strategy.

Studies to be included will report on the evaluation of Knowledge Translation (KT) strategies that have been implemented in a healthcare setting. We are limiting the setting to the healthcare environment as the organisational culture of healthcare settings is known to have unique characteristics (Azzolini, Ricciardi, & Gray, 2018; Stentoft & Freytag, 2020). This systematic review is
interested in developing an understanding of the characteristics and components of KT strategies that have achieved positive outcomes in terms of impact on organisational culture or patient safety. Therefore, for studies to be eligible, they must report on KT strategy components, evaluation outcomes, and the effect of KT on organisational culture and or patient safety in the healthcare setting. Conversely, studies will be excluded if they are reporting on KT strategies implemented in settings other than in healthcare environments.

This study recognises the definition of Organizational Culture as the beliefs and values shared by all members of an organization, which are subject to change, and are reflected in the day-to-day management of the organization (Azzolini et al., 2018; Stentoft & Freytag, 2020). When we consider patient safety outcome measures, we have agreed as a team to acknowledge the World Health Organization's definition of an outcome measure as a "change in the health of an individual, group of people, or population that is attributable to an intervention or series of interventions (World Health Organization, 2018)." Outcome measures (mortality, readmission, patient experience) are the quality and cost targets healthcare organizations are trying to improve and thus, will draw the focus of our data extraction.

Knowledge Translation can be defined as a dynamic and iterative process involving a range of activities that support the use of research findings to inform policy and guide evidence-based practice (Mallidou et al., 2018). Across the broad spectrum of health literature, knowledge translation is known to be used interchangeably with terms such as implementation science, research utilisation, dissemination and diffusion, research use, knowledge transfer and uptake (Tait & Williamson, 2019).

Information sources

This study’s search strategy has been developed using medical subject headings (MeSH) and includes keywords related to each of our domain headings. We used these search terms and keywords to search PubMed/MEDLINE, the Cumulative Index of Nursing and Allied Health Literature (CINAHL with Full Text), Scopus, ProQuest and Web of Science databases to ensure we captured all relevant literature, we scanned the reference lists of retrieved results as well as searching for included authors’ previous publications to ensure we achieved literature saturation.

Search strategy

Whilst the literature search excludes certain study designs, we did not exclude studies based on the methodology employed, therefore the included studies could include both qualitative and quantitative results. The search limited inclusion to studies published from January 2016 to ensure contemporary evidence is included and reported upon. To involve all team members in each stage of the review process, we only retrieved results published in English. The specific search strategies and combinations of search operators for each database were created and run by the lead researcher. A copy of one of the database search strategies is included in Fig. 1.

Study records

Data management – all retrieved records from the initial pilot search onwards are stored and managed through the lead researcher’s EndNote library. At various stages of the review, files were exported to Rayyan when multi reviewer input was required. Both EndNote and Rayyan software programs are designed to manage bibliographies. No retrieved studies were deleted, rather, they are filed in clearly labelled folders within the project lead’s EndNote library. This means that all included studies will be retrievable at any stage of the project.

Selection of sources of evidence

The project team developed a screening protocol for level 1 and 2 assessment processes (as described below) to ensure consistency and rigour around the selection/inclusion process. We conducted a calibration exercise involving all team members to pilot and refine the screening process to ensure consistent treatment of the study results from all team members. All four project members (TF, AS, DM, CT) participated in both screening levels, independently. Each person individually reviewed each study’s title and abstract to screen for eligibility and studies were included when all reviewers assessed them as
satisfying the inclusion criteria. If in doubt, studies were retained for screening level 2, where we scrutinised the full texts of studies to determine their eligibility for selection. At both screening levels, studies were contrasted against our project’s inclusion criteria. Whilst selection choices occurred with the blind on (no one can see anyone else’s inclusion/exclusion choices), journal titles, study authors or institutions were not blinded to any of the research team. Disagreement regarding inclusion decisions was resolved via open and transparent team discussions.

Level 1 Inclusion criteria (titles and abstracts)

1. Study reports on the implementation of a KT strategy
2. In a hospital setting

Level 2 screening criteria (full-text review)

1. KT strategy goals and activities (characteristics and components) are documented
2. KT strategy must be evaluated, and the outcome(s) identified
3. Outcomes must be related to patient outcomes AND OR organisation culture

Table 2: Explanation key for exclusion reasons

Quality Appraisal

The Mixed Methods Appraisal Tool (MMAT) is designed to appraise the methodological quality of quantitative, qualitative and mixed methods studies (Hong et al., 2018). As our systematic review did not exclude studies based on their methodologies, the MMAT suits this project's purpose. Two team members (TF and DM) used the tool to appraise the quality of each included study. The tool begins with two overall screening questions; are there clear research questions and do the collected data allow researchers to address the research questions. Following on from these, questions are asked based on each study’s methodology. The tool advises users to not calculate an overall score by awarding ratings to each question, rather, users are advised to provide more details about each criterion to arrive at a more informed overview of the quality of each study. A record of screening results is maintained by the lead researcher. No studies were removed as a result of the quality appraisal assessment.

Data charting process

Once the list of included studies was finalised, team members independently extracted data and recorded it on a data abstraction tool. The data abstraction tool was developed using Excel software via an iterative, consultative, collaborative process involving all four authors (TF, AS, DM, CT). Headings included in the data abstraction tool were guided by the overarching goal of the study; to develop an understanding of the characteristics and components of KT frameworks that have effected organisational change. Data abstracted includes specific characteristics and components of each KT framework, and importantly, reports on all characteristics of the KT framework related to organisational change and patient outcomes. The lead researcher collated all independent responses and then the team met to synthesise the individual responses. Disagreements regarding data abstraction coding or theme decisions were resolved via open and transparent team discussions and we maintained a record of reasons for data abstraction headings.

Data items

The four authors scrutinised the retrieved studies for evidence of the impact of KT framework implementation on organisational change resulting in improved patient outcomes. Our team have clearly defined what data will be representative of organisational culture and patient outcomes. We were guided by the following definition of Organizational Culture: the beliefs and values shared by all members of the organization, which are subject to change, and are reflected in the day-to-day management of the organization (Azzolini et al., 2018; Stentoft & Freytag, 2020). We relied on WHO’s definition of outcome
measures when extracting data: “change in the health of an individual, group of people, or population that is attributable to an intervention or series of interventions” (World Health Organization, 2018).

Outcomes and prioritization

The overarching prioritization for this review is to identify the characteristics and components of KT Frameworks that have achieved organisational change that can be linked to improved patient outcomes. Secondary outcomes will be the identification of KT characteristics and components that have affected organisational culture in general.

Risk of bias individual studies

To assess the included studies’ possible risk of bias, the Cochrane Collaboration tool for assessing the risk of bias was used (Higgins et al., 2020). This tool covers topics such as allocation concealment, blinding, incomplete data including dropouts and withdrawals and selective outcome reporting. All four team members (TF, AS, DM, and CT) assessed each study as per each domain of the tool to arrive at a determination of the risk of bias for each study. Consultatively, our team arrived at the risk of biased judgement for each study, rating the studies either low or high risk. If any doubt about any particular study, we rated that study as unclear. Disagreements regarding the risk bias rating for each study were resolved via open and transparent team discussions and we maintained a record of reasons for each study’s rating for final reporting purposes.

Synthesis of results

The literature search returned both qualitative and quantitative results, therefore we chose to conduct a systematic narrative synthesis to reflect and summarise the findings of the included studies. Data from all included studies were extracted to an excel audit tool, with our team generating headings related to characteristics and components of each KT Framework examined. Once all studies were analysed and the data abstracted onto the audit tool, the team met to discuss the coding requirements of relevant data. When we were confident that all data were accounted for, results were synthesised.

Meta-bias(es)

The research team could find no evidence of existing (published or submitted) protocols for any of the included studies. Likewise, we could not identify if subsets of data from the four included studies were not published or disseminated, therefore, we could find no evidence of either publication or outcome reporting bias.

Results

Once 782 duplicates were removed, a total of 1498 results were screened for eligibility criteria. After level one screening, 78 full texts were retrieved for level two screening, resulting in four studies that met all eligibility criteria (table 3). Reasons for exclusion are presented in table 2.

Knowledge Translation Frameworks

Our study confirmed that a diverse range of knowledge translation frameworks and strategies are used across the health sector to guide the development and evaluation of implementation projects and quality improvement initiatives (see table 3). Use of these frameworks tends to vary, with some studies applying the framework in its entirety and others using the framework to develop the implementation plan and structure intervention strategies. Others used it to guide their intervention or implementation evaluation process.

Both Colman et al. (2021) and Sood et al. (2017) demonstrated an improvement in implementation intervention compliance and adherence by using a translational simulation model and a Comprehensive Unit-based Safety Program (CUSP)/Translating Research Into Practice (TRIP) model, respectively. The remaining two studies focus specifically on the implementation outcomes and therefore use the KT frameworks to structure their evaluations. Sharplin et al. (2019) used Proctor’s Implementation Evaluation Framework to evaluate the barriers and enablers to the implementation and sustainability
of an evidence-based practice framework [Best-Practice Spotlight Organization (BPSO) Program]. Whereas White et al. (2019) used the Consolidated Framework for Implementation Research (CFIR) to structure the implementation approach, as well as evaluate the effectiveness and success of implementation.

Reporting on outcomes

In Australia, the operational definition of a patient outcome is “a change in the health of an individual, or a group of people or population, which is wholly or partially attributable to an intervention or series of interventions” (Australian Institute of Health and Welfare (AIHW), 2003). Outcome measures are closely aligned with knowledge translation because the driving force of any knowledge translation strategy is to improve outcomes. Despite this, only one paper in this review reported the outcomes of the measure (Sood et al., 2017). These patient outcomes were all related to patient safety and involved reducing central line-associated bloodstream infections (Sood et al., 2017).

The study by White et al. (2019) identified CFIR constructs of culture, implementation climate and readiness as key constructs in creating a multidisciplinary learning environment. At an individual level, staff self-efficacy and motivation were identified as vital to ensuring sustained change across the organisation. For example, White et al. (2019) identified 31.1% of participants (169 of 543) reported using at least part of the WHO checklist all the time, however, after a training intervention, this increased to 88.8% (158 of 178) at 4 months, and 86% (86 of 100) at 12–18 months.

Characteristics and components of KT strategies

To develop a better understanding of the efficacy of existing KT frameworks, our study set out to determine the characteristics and components of knowledge translation (KT) strategies that have affected organisational culture and or improved patient outcomes. Three (Colman et al., 2021; Sood et al., 2017; White et al., 2019) of the included studies report on patient safety outcomes and one study reports on organisational outcomes (Sharplin et al., 2019).

Of the three studies that reported on patient safety outcomes, one utilized Translational Simulation to embed change (Colman et al., 2021), another used the Comprehensive Unit-based Safety Program (CUSP)/ Translating Research Into Practice (TRIP) model (Sood et al., 2017) and the third employed the Consolidated Framework for Implementation Research (CFIR) framework (White et al., 2019). The only study (Sharplin et al., 2019) to report on organisational culture used the Best-Practice Spotlight Organization (BPSO) Program.

Colman et al. (2021) employed translational simulation to improve adherence to the NEAR4KIDS Airway Safety Quality Improvement bundle checklist, known to improve Paediatric tracheal intubation safety through standardisation of practice. The translational simulation model reported on by Colman et al. (2021) utilised Reflective Deliberate Practice, a debriefing approach blending Rapid Cycle Deliberate Practice (RCDP) and Traditional Reflective Debriefing (TRD). This model of knowledge translation engages technical, clinical and professional experts throughout the various cycles. Expert clinicians provide discipline related feedback to the learners and professionally trained facilitators deliver coaching to the educators. Before delivering the simulation sessions, the coaches and educators rehearsed the scenarios with expert clinicians. Whilst the actual simulation training sessions were only 40 minutes long, they were repeated, refined and practised until all learners exhibited their ability to master the skill being taught. In between each simulation cycle, there was a debrief session where learners were guided to explore their strengths and weaknesses and the educators identified performance gaps to focus on in the next iteration of the scenario.

The Comprehensive Unit-based Safety Program (CUSP)/ Translating Research Into Practice (TRIP) framework was used by Sood et al. (2017) to implement a series of interventions designed to reduce central-line–associated bloodstream infections in a burn intensive care unit. This knowledge translation method involved developing specific checklists and embedding communication pathways to ensure common goals were articulated and understood by all stakeholders. This method of knowledge translation requires engagement from stakeholders at both organisational, team, and individual levels. Leaders representing the organisation communicate with managers and frontline staff to articulate a goal (in this case, zero infections) and then create an enabling infrastructure to achieve this goal. The enabling infrastructure involves the creation of a
coordinating team comprised of quality improvement staff and clinical experts. The role of the coordinating team is to provide various support mechanisms to guide the design, development and implementation of the intervention. Once the intervention is developed, front line clinicians are engaged in learning sessions with representatives from other units. This method of community peer learning means that clinicians learn from each other and when they become the change champions in their units, can reach out to their peers for support when need be. Finally, transparent reporting is mandated, ensuring the accountability of outcomes. Performance data from each unit is widely disseminated and organisational leaders follow up when performance goals are not met to find solutions to identified challenges.

The Consolidated Framework for Implementation Research (CFIR) was the method of choice for (White et al., 2019) when they implemented and evaluated a nationwide scale-up of a surgical safety checklist. The CFIR is a meta-framework designed specifically to develop, implement and evaluate health interventions. This framework guides users to identify contextual factors across numerous levels that can affect the implementation and eventual success of an intervention. CFIR has 37 constructs within five domains: (1) intervention characteristics; (2) outer setting; (3) inner setting; (4) characteristics of individuals; and (5) process. The White et al. (2019) study comprised three phases, pre-implementation, implementation and evaluation. The pre-implementation phase involved collecting baseline data from stakeholders to conduct a feasibility and planning assessment. This phase had the twofold aim of identifying potential implementation barriers and seeking buy-in at the organisation and individual levels. The second phase was the implementation of the intervention, requiring the delivery of a three-day training course, repeated at three months. Phase three saw a longitudinal evaluation carried out between 12 and 18 months, post-implementation. The five CFIR domains informed all three phases of the implementation strategy and were used to examine why the implementation process was successful and where future improvements could be made.

Only one of the included studies reported on organisational culture change (Sharplin et al., 2019) and they used the Best-Practice Spotlight Organization (BPSO) Program to inform the implementation and evaluation of their intervention. The BPSO was developed by the Registered Nurses Association of Ontario and launched in Canada in 2003 as a series of best practice guidelines. The program provides best practice recommendations at the individual, team and organisational levels, as well as the educational level for those responsible for delivering education and training to staff. In terms of the Sharplin et al. (2019) study, factors that were reported as facilitating successful implementation include the establishment of structured and stable governance arrangements, interconnectivity between units and personnel, and linked resources. Having an executive responsible for the implementation was noted as critical to success. The establishment of a network of change champions at all levels as a means of engaging all employees was another successful element. Factors that inhibited successful implementation relate to organisational and workforce issues such as staff attrition and secondments, staff not being released for education and an absence of commitment to the program at the executive level.

Whilst the four included studies each employed individual knowledge translation frameworks, the common denominator for all four, was obtaining buy-in from stakeholders at the individual, team and organisational levels. Establishing and maintaining effective lines of communication and transparent reporting were other common factors when the studies reported successful implementation outcomes.

**Discussion**

In this SR we aimed to systematically review literature related to KT frameworks and evaluate their use in the healthcare settings to effect organisational cultural change and improve patient outcomes. The findings from this SR are important because the impact of knowledge translation strategies on organisational culture and patient outcomes remains unclear, poorly described and under researched (Foxcroft & Cole, 2000).

As health care continues to redevelop and reform, healthcare providers need to consider how best to embed evidence-based practice whilst managing considerable demographic, technological, financial and political challenges (Anderson, Johnston, Massey, & Bamford-Wade, 2018). Organisational culture has been identified as an important element in improving workplaces, reducing costs, promoting knowledge translation and ultimately, enhancing patient outcomes (Anderson et al., 2018; Flodgren, Rojas-Reyes, Cole, & Foxcroft, 2012). Despite this, there remains very limited evidence about the impact of implemented
knowledge translation strategies on organisational culture and patient outcomes (Flodgren et al., 2012) and our findings confirm this. The success or failure of change processes and the translation of evidence into clinical practice are strongly collated to organisational culture (Kutney-Lee et al., 2015) and so clearly describing this element is important. Empirically establishing the impacts of knowledge translation strategies on organisational culture is an area that appears to have remained elusive to researchers, yet the reasons for this are unclear. As researchers continue to explore different models and theories associated with successful knowledge translation (Olson & Oudshoorn, 2020) there are clear opportunities to include the impact to organizational culture in the emerging research agenda.

Although patient outcomes have been identified as an important factor in successful knowledge translation (Olson & Oudshoorn, 2020) we identified only one study that reported patient outcomes (Sood et al., 2017). This was surprising, considering that the primary aim of any knowledge translation strategy is to improve outcomes (Mehrdad, Peyrovi, Kitson, Schultz, & Athlin, 2014; Olson & Oudshoorn, 2020). Pragmatically, it makes sense that effective knowledge translation strategies will improve outcomes for patients, but again, this remains an elusive element in the knowledge translation literature. Given that ineffective knowledge dissemination results in suboptimal clinical practice and service improvements not being realised (Thirsk, 2018), one would think that research in this space should be mandated. With some scholars estimating that 30–40% of patients are not receiving care according to best standards of practice or are otherwise receiving care that is unnecessary and potentially harmful (Davis et al., 2003; I. D. Graham et al., 2006; Pronovost et al., 2008), it is now more important than ever, that the relationship between effective knowledge translation and improved patient outcomes be confirmed by high-quality research.

Given that many of the research studies we assessed and evaluated in this SR, were single centre descriptive studies with small sample sizes, there is a clear opportunity for research to use more robust and rigorous research methodologies to identify the key components of successful knowledge translation strategies.

Strengths and Limitations

The authors highlight several strengths and limitations regarding the development and conduct of this SR. One of the strengths is that we drew upon the knowledge of experts in the field to create a comprehensive search strategy. The result of this was the reassurance that the majority (we could not claim all) relevant data was captured, allowing for thorough scrutiny of the related literature. Following on from the initial development of the SR protocol (registered with Prospero) all four authors maintained sustained engagement with this project from start to finish, lending continuity and consistency to data collection and analysis. We took advantage of validated tools to assess the quality and potential bias of all retrieved results, ensuring the inclusion of quality, unbiased studies. As well as harvesting literature from multiple electronic databases, our experienced research team conducted hand searches and reference list checks to ensure all relevant evidence was included. Another strength to this SR was the composition of our team; our team includes practicing clinicians and experienced researchers. This provided our project with great insight to nuances that lent rigour to development of our search strategy, data extraction and analysis methods.

In terms of limitations, the dearth of returned results that report on outcomes was very disappointing and highlights the need for future work in this space. The paucity of literature related to this field of research and the variation of evaluation methods utilised by researchers made it challenging to synthesise and draw conclusions from the limited evidence base. Another limitation is the quality of the studies published in this field. Given that many of the research studies we assessed and evaluated in this SR, were single centre descriptive studies with small sample sizes, there is a clear opportunity for researchers to use more robust and rigorous research methodologies to identify the key components of successful knowledge translation strategies.

Conclusion

Evidence-based practice is imperative to providing high-quality patient-centred care, however, there remains a significant gap in the implementation and translation of evidence-based practice to patient care. Knowledge translation frameworks have been
developed to bridge this gap and have provided useful tools for researchers to support the implementation and translation of evidence. However, the impact to organisational culture and patient outcomes from use of these frameworks has yet to be clearly articulated. In this SR we confirm a lack of knowledge about these important elements and argue that failure to understand all the elements of knowledge translation processes will negatively impact patient safety and waste valuable resources. Future research should be undertaken to explore how knowledge translation processes impacts and affects organisational culture. Importantly, our study identified the need for research that reports on patient outcomes resulting from implemented knowledge translation strategies. Pragmatically, it makes sense that effective knowledge translation strategies will improve patient outcomes, but due to a paucity of available evidence, this remains an elusive element in the knowledge translation literature.

Declarations

Ethics approval and consent to participate

Not required for a systematic review, however, this review was registered with the international prospective register of systematic reviews (PROSPERO), ID: 265470 on 02/07/21, remaining under assessment at the time of submission. The design and methods used for this systematic review will be informed by and comply with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2015) (see attached PRISMA Checklist).

Consent for publication

This manuscript does not contain any individual person's data. All four authors have reviewed the manuscript and consent for publication.

Availability of data and material

All retrieved results are available upon request.

Competing interests

The authors declare that they have no competing interests.

Funding

There is no funding or sponsors for this review.

Author Contributions

TF led and guaranteed the review, AS, DM, and CT collaborated on all aspects of the review.

Acknowledgments

NA

References


Tables

Table 1: PICo framework
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<td>Intervention</td>
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<tr>
<td>Co</td>
<td>Context</td>
<td>improved patient outcomes within a hospital setting</td>
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<td>Keywords</td>
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<td>Hospital setting</td>
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Table 2: Explanation key for exclusion reasons

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<th>Reason Heading</th>
<th>Explanation</th>
</tr>
</thead>
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<td>1. Wrong publication type</td>
<td>Is not an evaluation OR does not report outcomes OR is not a knowledge translation strategy OR does not report on Knowledge translation implementation</td>
</tr>
<tr>
<td>2. Wrong study design</td>
<td>is a literature review (scoping, integrative, systematic etc) OR is a conference presentation OR is not a journal article</td>
</tr>
<tr>
<td>3. Not relevant to our topic</td>
<td>The manuscript topic is not relevant to our topic OR study does not report on the hospital setting</td>
</tr>
<tr>
<td>4. Wrong population</td>
<td>Does not report on clinicians and or hospital setting</td>
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<td>5. Not English</td>
<td>An English version of the study could not be located</td>
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Table 3: Included studies’ characteristics
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<th>Citation</th>
<th>Country</th>
<th>Study Design</th>
<th>Aims</th>
<th>Participants</th>
<th>Setting</th>
<th>KT strategy or framework</th>
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<tr>
<td>Colman, N., et al. (2021). &quot;Translational Simulation Improves Compliance with the NEAR4KIDS Airway Safety Bundle in a Single-centre PICU.&quot; Pediatr Qual Saf 6(3): e409.</td>
<td>US</td>
<td>Single-centre retrospective review</td>
<td>To identify and remediate barriers that contribute to poor bundle compliance in a large academic pediatric ICU.</td>
<td>180 learners, including 19 paediatric critical care medicine fellows, 4 critical care nurse practitioners, 127 nurses, and 30 RTs, participated in the simulation.</td>
<td>PICU at Children's Healthcare of Atlanta at Egleston (one site)</td>
<td>Translational Simulation</td>
</tr>
<tr>
<td>Sharplin, G., et al. (2019). &quot;Establishing and Sustaining a Culture of Evidence-Based Practice: An Evaluation of Barriers and Facilitators to Implementing the Best Practice Spotlight Organization Program in the Australian Healthcare Context.&quot; Healthcare (Basel) 7(4).</td>
<td>Australia</td>
<td>Post-implementation, mixed-method</td>
<td>To identify program-level factors that act as facilitators or barriers to implementation success,</td>
<td>Participants selected for interview or focus group attendance were determined based on stakeholder positions from the BPSO program governance structure. 16 people invited – 11 accepted. 12 attended focus groups – 86 completed survey</td>
<td>Site 1 was focused specifically on the care of women and pediatrics and Site 2 was a directorate focused on caring for people living with mental health issues</td>
<td>Proctor's Implementation Evaluation Framework</td>
</tr>
<tr>
<td>Citation</td>
<td>Country</td>
<td>Study Design</td>
<td>Aims</td>
<td>Participants</td>
<td>Setting</td>
<td>KT strategy or framework</td>
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<tr>
<td>White, M. C., et al. (2019).</td>
<td>UK and Madagascar</td>
<td>Longitudinal embedded mixed-methods</td>
<td>Evaluate nationwide checklist implementation in 36 hospitals</td>
<td>638 people from medical, nursing, admin and allied health</td>
<td>36 Hospitals in UK and Madagascar, small, medium and large hospitals, reported by bed number.</td>
<td>Consolidated Framework for Implementation Research (CFIR)</td>
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</table>

Table 4: Knowledge Translation Frameworks

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<tr>
<th>Framework or Strategy Used</th>
<th>Consolidated Framework for Implementation Research (CFIR)</th>
<th>Translational Simulation</th>
<th>Proctor's Implementation Evaluation Framework</th>
<th>Comprehensive Unit-based Safety Program (CUSP)</th>
<th>Translating Research Into Practice (TRIP) model</th>
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<tbody>
<tr>
<td>Citation</td>
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<td></td>
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<tr>
<td>Colman, N., et al. (2021).</td>
<td></td>
<td></td>
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<td>Sharplin, G., et al. (2019).</td>
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<td>Sood, G., et al. (2017).</td>
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<td>White, M. C., et al. (2019)</td>
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Figures
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<td>#17 AND #18 AND #19 AND #20 AND #21</td>
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<td>21</td>
<td>Hospital OR &quot;health clinic&quot; OR &quot;health sector&quot; OR &quot;nursing home&quot; OR &quot;health service&quot; OR ward OR &quot;acute care&quot; OR &quot;inpatient service&quot;</td>
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<td>20</td>
<td>&quot;Outcome measures&quot; OR outcomes OR results OR &quot;positive results&quot; OR &quot;improved patient outcomes&quot; OR &quot;patient outcomes&quot; OR &quot;improved health outcomes&quot; OR &quot;reduced admission time&quot; OR &quot;reduced readmission&quot; OR &quot;patient experience&quot; OR &quot;earlier discharge&quot; OR &quot;reduced mortality&quot; OR &quot;reduced morbidity&quot; OR &quot;Improved Reported Patient Outcome Measures&quot; OR PROMs OR &quot;improved patient satisfaction&quot; OR &quot;reduced length of stay&quot;</td>
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**Figure 1**

*PubMed database search strategy*
Figure 2

PRISMA 2020 flow diagram including search results from databases, registers and other sources (Page et al., 2021)

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- KTSRPRISMA2020checklist.docx