BMJ Open

Using theatre as an arts-based knowledge translation strategy for health-related information: a scoping review protocol

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2019-032738
Article Type:	Protocol
Date Submitted by the Author:	02-Jul-2019
Complete List of Authors:	Hall, Amanda; Memorial University of Newfoundland, Medicine Furlong, Bradley; Memorial University of Newfoundland, Medicine Pike, Andrea; Memorial University of Newfoundland, Medicine Logan, Gabrielle; Memorial University of Newfoundland, Medicine Lawrence, Rebecca; Memorial University of Newfoundland, Medicine; Memorial University of Newfoundland, Psychology Ryan, Alexandra; Memorial University of Newfoundland, Medicine; Memorial University of Newfoundland, School of Human Kinetics Etchegary, Holly; Memorial University, Clinical Epidemiology Hennessey, Todd; Memorial University of Newfoundland - Grenfell Campus, School of Fine Arts Toomey, Elaine; University College Dublin,
Keywords:	Knowledge translation, Scoping review, Theater, Research use

TITLE: Using theatre as an arts-based knowledge translation strategy for health-related information: a scoping review protocol

AUTHORS: Amanda Hall,[1] Bradley Furlong,[1] Andrea Pike,[1] Gabrielle Logan,[1] Rebecca Lawrence,[1,2] Alexandra Ryan,[1,3] Holly Etchegary,[4] Todd Hennessey,[5] Elaine Toomey[6,7]

AFFILIATIONS:

[1]Primary Healthcare Research Unit, Faculty of Medicine, Memorial University, Newfoundland, Canada

[2]Department of Psychology, Memorial University, St. John's, Newfoundland, Canada

[3]School of Human Kinetics, Memorial University, St. John's, Newfoundland, Canada

[4] Faculty of Medicine, Memorial University, St. John's, Newfoundland, Canada

[5]School of Fine Arts, Grenfell Campus, Memorial University, Corner Brook, Newfoundland, Canada

[6]Health Behaviour Change Research Group, National University of Ireland Galway, Galway, Ireland

[7]Cochrane Ireland, National University of Ireland Galway, Galway, Ireland

CORRESPONDING AUTHOR:

Andrea Pike

Primary Healthcare Research Unit, Memorial University
Health Sciences Centre
300 Prince Phillip Drive
St. John's, NL Canada
A1B 3V6
andrea.pike@med.mun.ca
709-777-6823

WORD COUNT: 2983 words (excluding title page, abstract, references, figures, and tables)

ABSTRACT

Introduction: Substantial delays in translating evidence to practice mean that many beneficial and vital advances in medical care are not being used in a timely manner. Traditional KT strategies have tended to target academics by disseminating findings in academic journals and at scientific conferences. Alternative strategies, such as theatre-based KT, appear to be effective at targeting broader audiences. The purpose of this scoping review is to collate and understand the current state of science on the use of theatre as a KT strategy. This will allow us to identify gaps in literature, determine the need for a systematic review, and develop additional research questions to advance the field.

Methods and analysis

This review will follow established scoping review methods outlined by Arksey and O'Malley in conjunction with enhanced recommendations made by Levac, Colquhoun, and O'Brien. The search strategy, guided by an experienced librarian, will be conducted in PubMed, CINHAL, and OVID. Study selection will consist of three stages: (1) initial title and abstract scan by one author to remove irrelevant articles and create a shortlist for double-screening, (2) title and abstract scan by two authors, (3) full-text review by two authors. Included studies will report specifically on the use of theatre as means of knowledge translation of health-related information to any target population. Two reviewers will independently extract and chart the data using a standardized data extraction form. Descriptive statistics will be used to produce numerical summaries related to study characteristics, KT strategy characteristics and evaluation characteristics. For those studies that included an evaluation of the theatre production as a KT strategy, we will synthesize the data according to outcome.

Ethics and Dissemination

Ethical approval was not required for this study. Results will be published in relevant journals, presented at conferences, and distributed via social media.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This protocol will follow the recommended guidance for scoping reviews to ensure accuracy, clarity, and reproducibility.
- Our team is a multidisciplinary collaboration between experts in the areas of systematic and scoping reviews and application of knowledge translation strategies and arts-based practices to facilitate high-level discussion between fields to ensure accurate and robust interpretation of the findings.
- The review topic and objectives were co-developed amongst relevant knowledge users.
- Due to the broad nature of scoping reviews there will be no quality assessment of included studies.
- Only peer-reviewed literature will be considered in this review.

INTRODUCTION

Evidence practice gap

Evidence-practice gaps, defined as the disparity between research evidence and usual clinical practice,[1] pose a significant problem for healthcare systems and the quality of care they provide to patients. Numerous clinical audits across several areas of healthcare have identified a lack of adherence to clinical practice guidelines, resulting in the underuse of evidence-based interventions or over-use of outdated research.[2–6] This issue is widespread, and research across multiple countries repeatedly shows that patients are receiving unsuitable and outdated care, which in certain cases can be harmful.[7] For example, poor staff adherence to evidence-based infection prevention practices and hand hygiene practices in hospitals has been linked with healthcare-associated infections which are associated with patient mortality rates varying from 5% to 35%.[8–12] In a 2011 review, Morris et al. identified that 17 years was the most commonly reported average time-frame for the translation of health research to practice.[13] These substantial delays in translating evidence to practice means that many beneficial and vital advances in medical care are not being used in a timely manner. This presents a real and direct risk to the quality of care provided to patients and also to overall patient safety. Translating evidence into practice to achieve better patient outcomes is therefore becoming a key priority for many health researchers, heath funders and health systems.

Much of the delay in translation of evidence into practice has been attributed to research waste.[2–6] In 2009 it was estimated that about 85% of research investment was wasted and could have been better spent to ensure the transferability of research to practice.[14,15] In 2016, a review of what funders, regulators, academic institutions and researchers were doing

to address waste found an improvement in the generation of clinically-relevant research questions and adherence to standards for research reporting and rigour.[16] However, less has been done to ensure the translation of research findings to practice.[16] The authors recommended that researchers should systematically plan to use knowledge translation strategies to more effectively disseminate their research for knowledge users.[16]

Knowledge translation

Knowledge translation (KT) is the use of systematic and iterative processes to translate evidence-based research findings into practice, and has gained traction over the last decade.[1,17,18] However, the field of KT is still emerging with little consensus on the most effective approaches. This is evidenced by a recent scoping review that identified 592 studies (published in the last 20 years) that used 159 theories, frameworks and models to underpin their KT strategies with very limited information on how these were actually applied.[19] To provide more clear direction, several KT planning guides have also been developed to help researchers and organisations think about how best to translation findings for knowledge users.[17,20] For example, Ian Graham produced "Guide to Knowledge Translation Planning at CIHR: Integrated and End-of-Grant Approaches" which helps researchers identify their target knowledge users and their KT goals (e.g. to increase awareness, knowledge, or skills or to promote behaviour change) and then consider what KT strategies to use to achieve these goals.[17]

Knowledge translation strategies

KT strategies (sometimes referred to as interventions) are overt activities or devices that facilitate or encourage the use of research to achieve clinical practice change.[21] There are

numerous KT strategies to choose from, as evidenced in recent reviews which identified over 30 different strategies within the literature.[22–24] Traditional KT strategies have tended to focus on publishing research findings in academic journals and presenting results at scientific conferences. This approach is typically used to inform other researchers and academics about the latest advances in health research with the goal of advancing science. However, in recent years, the importance of translating health research across all stakeholder groups has been recognised[17,25] to facilitate better uptake of research into practice and reduction of research waste, and to achieve broader and greater research impact. As such, KT has evolved and broadened in scope to include translation and dissemination of evidence for a wider range of knowledge-users (e.g. clinicians, policy makers, patients, and the public). Since these audiences have different knowledge needs and will use the information for different purposes, alternative KT strategies have been proposed. Alternative KT strategies typically include activities and devices such as plain language summaries, evidence briefs, practice guidelines, educational outreach, mass media, toolkits, opinion leaders or financial incentives. Increasingly, healthcare researchers are also using arts-based KT strategies to translate and disseminate their findings, however much less is known about how this is used.

Arts-based KT

Arts-based KT strategies can be broadly grouped into 3 categories, visual (photographs, drawings), literary (poetry) or performance (e.g. theatre, narrative based arts) and are used to translate key, educative messages to broader audiences.[26] Arts-based KT is a multidisciplinary approach that brings together professionals with a variety of different expertise. This is a considered a strength that may result in unique and improved ways of disseminating research-

based evidence that can appeal to more diverse audiences than traditional scientific presentations and posters.[27] For example, they are likely to garner more attention, stimulate affective responses, and incite discussion and story sharing between those involved.[26–28] They appear to be especially effective at targeting broader audiences because they are accessible to the general public, can be enjoyed without any particular expertise[26] and cater to a variety of different learning styles.[29] For this reason, individuals of different ages, genders, backgrounds, and cultures can often relate to these art forms, which may heighten their understanding and acceptance of any message being conveyed.[26]

Theatre-based KT

Theatre is defined as a presentation or activity that uses drama to engage and entertain an audience [30]. This medum has been commonly used as an educational tool in other disciplines such as education and sociology for its ability to engage audiences on both affective and cognitive levels, a process that has been found to be central to the success of educational interventions.[27,31] In addition, some theatre productions allow for audience participation which places individuals directly in the context of a specific situation, resulting in stronger emotional responses and attention.[32] Theatre may be an especially effective KT strategy for public audiences because it is a commonplace and culturally acceptable activity in many countries and communities.[33] It is also often feasible in low-income areas where other forms of media (e.g., television or radio) are inaccessible. For example, Islam et al.[34] found that only 0.4% of people in Bangladesh had access to television, so they used a village theatre production to convey information about eclampsia. This study found improved eclampsia knowledge using a pre-post survey.[34] A previous review of the literature up to 2009 found 7 studies that used

arts-based methods of drama or theatre for disseminating health research.[35] The theatre productions were used to impart knowledge about chronic conditions, cancer, HIV, dementia and traumatic brain injury to allow care providers assimilate knowledge and understanding through multi-sensory mechanisms (i.e. by watching, hearing, and feeling the message as opposed to solely reading journal publications, pamphlets, or conference proceedings).[27,31,35–37] While the review highlighted that theatre was one of the arts-based strategies used in health research it provided only a high level overview of these studies and thus did not provide sufficient detail about the development of the theatre production, methods of evaluation or the outcome measurement tools used to assess effectiveness. While, the interest in KT and using arts-based KT strategies such as theatre continues to grow the details on its intended aim, development, production, implementation and evaluation are still unknown. To date there has not been a review that has focused solely on the arts-based strategy of theatre.

Purpose

This will be the first review to collate and understand the current state of science on the use of theatre as a KT strategy for dissemination. This review will act as the foundation for a potential new program of research regarding performance arts based KT strategies, thus, we have chosen to use a scoping review methodology. By doing so, it will allow us to first obtain a broad and general understanding of the use of theatre as a KT strategy for health-related information. We will investigate the types of theatre being used, populations being targeted, messages being conveyed, what outcomes are being assessed, and the methods of evaluation. In this way, we can identify current gaps in literature, determine the need for a full systematic review of

effectiveness and develop additional research questions and methodologies to advance the field.

METHODS AND ANALYSIS

To ensure the accuracy and reproducibility of this study, we will follow the six-step scoping review guidance outlined by Arksey and O'Malley[38] in conjunction with enhanced recommendations to this guidance made by Levac, Colquhoun, and O'Brien.[39] We will also follow the Preferred Reporting Items for Systematic Review and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) checklist to ensure rigour.[40]

Stage 1: Developing the research question

The purpose of this review is to understand the "state of science" regarding the use of theatre as a KT strategy for health-related information. By this we mean establishing a foundational understanding of how theatre has been used and evaluated as a KT strategy, including target audiences, health topics addressed, types of theatre employed, and the research study designs and outcomes assessed. This will enable us to identify the knowledge gaps regarding the use and evaluation methods of theatre as a strategy for KT and provide guidance and suggestions for future research.

To meet our objective of understanding the state of science for the arts-based KT strategy of theatre used in a health research context, we will ask the following questions related to population, concept, and context:

Population

- What audiences are being targeted?

Concept:

- What types of theatre are being used for KT of health information?
- How has the theatre production been developed, produced and implemented?

Context:

- What types of health messages are being conveyed?
- What is the KT aim(s) of theatre (e.g. awareness, knowledge, skill development, behaviour change)?
- How has the theatre-based KT strategy been evaluated in terms of outcomes and study design?

Stage 2: Identifying relevant studies

The search strategy for this review was informed by strategies in previous systematic reviews on KT strategies.[21,26] The search strategy was reviewed and adapted by the research team in collaboration with an experienced librarian to combine the KT string with terms for 'Theatre'. The final search strategy was developed iteratively with the research team and can be found in Supplementary file 1. The search will be conducted from inception in the following databases: PubMed, CINHAL, and OVID. These databases were chosen to capture a comprehensive body of literature from health sciences disciplines. The searches will not be limited by language. Reference lists of key articles will be hand-searched by the review team to capture any papers missed in the electronic searches. The search results will be imported into Covidence review management software[41] and duplicate citations removed.

Stage 3: Study selection

Study selection will consist of three stages: (1) an initial title and abstract scan by one author to remove irrelevant articles and create a shortlist for double screening, (2) a short-list of titles/abstracts by two authors followed by (3) a full-text review by two authors. For duplicate screening, two authors will independently screen each citation and document their results on the review spreadsheet. They will also meet multiple times throughout stage 2 (title/abstract review) to discuss more complicated criteria as needed. During this process studies will be coded as “include”, “exclude”, or “unclear”. Studies marked “include” or “unclear” will be retrieved for full-text review using Covidence online software. Prior to full text review, reviewers will meet again to discuss uncertainties for inclusion or exclusion criteria. Studies will be coded in the same way as in title and abstract screening, in preparation for data extraction.

Studies that report specifically on the use of theatre as means of knowledge translation (e.g. dissemination of research findings) of health-related information (anything that impacts the health of humans) with any target population (public, patients, workers, care providers) will be included in the review. Studies in any language will be included proving an accurate translation can be performed. All study designs will be included ranging from descriptive only studies to evaluation studies (including feasibility, process, effectiveness or cost related evaluations), only peer-reviewed studies will be included.

Stage 4: Charting the data

A standardized data extraction form will be developed in Excel and pilot tested by the review team to allow reviewers to systematically chart the data. Supplementary file 2 includes a sample data abstraction chart highlighting the data variables that will be extracted from each of

the articles included in the review. These include study (i) study characteristics (e.g., publication year, country of origin); (ii) knowledge translation strategy characteristics (the target audience(s), goal(s), and how the theatre productions were developed and implemented; and (iii) evaluation characteristics (e.g. outcome variables, assessment methods, study designs). Two reviewers will independently extract data on the first 10% of included studies using the data extraction form. Reviewers will then meet with the lead investigator and discuss any uncertainties encountered during extraction, additional data elements they feel should be included, or any other feedback on the data extraction form to determine if the form needs to be refined.

Stage 5: Collating, summarizing, and reporting the results

We will use descriptive statistics to produce numerical summaries related to study characteristics, KT strategy characteristics and evaluation characteristics. For those studies that included an evaluation of the theatre production as a KT strategy, we will synthesize the data according to outcome. For example, we will provide a descriptive summary of all studies that evaluated outcomes in two main areas: implementation and effectiveness. Implementation outcomes of KT strategies relate to acceptability, reach, appropriateness, feasibility, fidelity, and implementation cost. Effectiveness variables include those relating to knowledge translation aims; awareness, knowledge, skills, and behaviour change.[42,43]

This stage of data extraction and summarising will be carried out by two, independent reviewers who will compare and consolidate their results through consensus. In cases where there is disagreement regarding data extraction or analysis that cannot be resolved through consensus, a third senior reviewer will help to resolve the conflict. The summary of data will

highlight the similarities, patterns, and differences in the way theatre is being used for the knowledge translation of health information as reported in the literature. While details about those studies that evaluated theatre-based KT strategies will be summarized, assessment of quality will not be undertaken as quality assessment is beyond the scope of this review. Considering these results, suggestions for future research evaluating theatre as a knowledge translation strategy for disseminating key messages from health research will be discussed.

Stage 6: Consultation

Our team includes representatives from the fields of knowledge translation, implementation science, theatre-arts, psychology and behaviour change research, clinical trials and health services research. We have co-developed the topic and research questions for the scoping review with all members of the research team. We will develop a consultation panel including representatives from the Canadian Strategy for Patient Oriented Research KT National Working Group, KT Canada and the Theatre Arts programs at Memorial University, the University of Alberta, and the University of Toronto. Consultation will pertain to (i) identifying if any important studies were missed in the search strategy, (ii) interpreting the findings to ensure validity and that any KT or theatre expert perspectives are represented accurately.

Patient and Public Involvement Statement

Members of the public were first involved in this work by way of contributing to a priority setting exercise to select which arts-based knowledge translation strategies were important and of interest to the public. Members of the public were consulted to help co-produce the research question by helping to set the eligibility criteria for the population and outcome terms

of the question; thereby helping to set the scope for the research question. Members of the public will be invited to review a plain language summary, an infographic and short video using adobe spark that we will use to present the key findings of the review. These will be disseminated to the public via our social medial channels and at local or international public engagement sessions.

ETHICS AND DISSEMINATION

This will be the first comprehensive review of the use of theatre as a strategy for knowledge translation in healthcare settings. It will form the foundation for a future program of interdisciplinary work between researchers in health services, knowledge translation and implementation science, knowledge translation change agents, educators in the arts, and research-based theatre performers. Ethical approval is not required for this scoping review. We plan to disseminate the results in several ways: publication in relevant journals; presentation at relevant conferences (e.g. KT Canada, INVOVLE UK); via social media using short summaries for non-academic audiences including a plain language summary, an infographic to depict findings and a short video with the research team to explain the state of science on using theatre as a KT strategy.

ACKNOWLEDGEMENTS

We acknowledge Ms. Michelle Swab, the librarian at Memorial University for assisting with adapting the search strategy used in this review. We also acknowledge the Strategy for Patient-Oriented Research (SPOR) Primary Healthcare Research and Integration to Improve Health System Efficiency (PRIIME) initiative for providing research support in the way of four part-time studentships that involve undertaking training to assist with data screening, collection and synthesis on various scoping reviews that will impact better translation of evidence into practice.

AUTHOR'S CONTRIBUTIONS

AH, ET, and TH conceptualized and designed this scoping review. AH, ET, BF, and AP drafted the protocol. AH, GL, RL, AR, and BF developed the search strategy and conducted the search. All authors reviewed provided feedback on the methods and analysis as well as the manuscript. ET, AP, and HE reviewed and provided feedback on the manuscript on both content and clarity. All authors provided their approval to publish this manuscript.

FUNDING STATEMENT

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

COMPETING INTERESTS STATEMENT

The authors have no competing interests to declare.

REFERENCES

1 Graham ID, Logan J, Harrison MB, *et al.* Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions* 2006;**26**:13–24. doi:10.1002/chp.47

2 Chalmers I, Bracken MB, Djulbegovic B, *et al.* How to increase value and reduce waste when research priorities are set. *The Lancet* 2014;**383**:156–65.

3 Ioannidis JP, Greenland S, Hlatky MA, *et al.* Increasing value and reducing waste in research design, conduct, and analysis. *The Lancet* 2014;**383**:166–75.

4 Salman RA-S, Beller E, Kagan J, *et al.* Increasing value and reducing waste in biomedical research regulation and management. *The Lancet* 2014;**383**:176–85.

5 Chan A-W, Song F, Vickers A, *et al.* Increasing value and reducing waste: addressing inaccessible research. *The Lancet* 2014;**383**:257–66.

6 Glasziou P, Altman DG, Bossuyt P, *et al.* Reducing waste from incomplete or unusable reports of biomedical research. *The Lancet* 2014;**383**:267–76.

7 Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Medical care* 2001;**39**:II–46.

8 Flodgren G, Conterno LO, Mayhew A, *et al.* Interventions to improve professional adherence to guidelines for prevention of device-related infections. *Cochrane Database of Systematic Reviews* 2013.

9 Gammon J, Morgan-Samuel H, Gould D. A review of the evidence for suboptimal compliance of healthcare practitioners to standard/universal infection control precautions. *Journal of Clinical Nursing* 2008;**17**:157–67. doi:10.1111/j.1365-2702.2006.01852.x

10 Pittet D, Donaldson L. Challenging the world: patient safety and health care-associated infection. *International Journal for Quality in Health Care* 2006;**18**:4–8. doi:10.1093/intqhc/mzi093

11 Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Infection Control & Hospital Epidemiology* 2002;**23**:S3–40.

12 Osborne S. Influences on compliance with standard precautions among operating room nurses. *American Journal of Infection Control* 2003;**31**:415–23. doi:10.1067/mic.2003.68

13 Morris ZS, Wooding S, Grant J. The answer is 17 years, what is the question: understanding time lags in translational research. *J R Soc Med* 2011;**104**:510–20. doi:10.1258/jrsm.2011.110180

14 Chen Y, Yang K. Avoidable waste in the production and reporting of evidence. *The Lancet* 2009;**374**:786. doi:10.1016/S0140-6736(09)61591-9

15 Chalmers I, Glasziou P. Avoidable waste in the production and reporting of research evidence. *The Lancet* 2009;**374**:86–9.

16 Moher D, Glasziou P, Chalmers I, *et al.* Increasing value and reducing waste in biomedical research: who's listening? *The Lancet* 2016;**387**:1573–86.

17 Canadian Institutes of Health Research. Guide to knowledge translation planning at CIHR: Integrated and end-of-grant approaches. 2012.http://www.cihr-irsc.gc.ca/e/documents/kt_lm_ktplan-en.pdf

18 Grimshaw JM, Eccles MP, Lavis JN, *et al.* Knowledge translation of research findings. *Implementation Science* 2012;**7**:50. doi:10.1186/1748-5908-7-50

19 Strifler L, Cardoso R, McGowan J, *et al.* Scoping review identifies significant number of knowledge translation theories, models, and frameworks with limited use. *Journal of Clinical Epidemiology* 2018;**100**:92–102. doi:10.1016/j.jclinepi.2018.04.008

20 Alberta Addiction and Mental Health Research Partnership Program. Knowledge Translation Evaluation Planning Guide. 2014.https://www.albertahealthservices.ca/assets/info/res/mhr/if-res-mhr-kt-evaluation-guide.pdf

21 Scott SD, Albrecht L, O'Leary K, *et al.* A protocol for a systematic review of knowledge translation strategies in the allied health professions. *Implementation Science* 2011;**6**:58. doi:10.1186/1748-5908-6-58

22 Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *The Lancet* 2003;**362**:1225–30. doi:10.1016/S0140-6736(03)14546-1

23 Scott SD, Albrecht L, O'Leary K, *et al.* Systematic review of knowledge translation strategies in the allied health professions. *Implementation Science* 2012;**7**:70. doi:10.1186/1748-5908-7-70

24 Albrecht L, Archibald M, Snelgrove-Clarke E, *et al.* Systematic Review of Knowledge Translation Strategies to Promote Research Uptake in Child Health Settings. *Journal of Pediatric Nursing* 2016;**31**:235–54. doi:10.1016/j.pedn.2015.12.002

25 involve. We Believe that People Should be at the Heart of Decision-Making. involve. http://www.involve.org.uk/

26 Scott SD, Brett-MacLean P, Archibald M, *et al.* Protocol for a systematic review of the use of narrative storytelling and visual-arts-based approaches as knowledge translation tools in healthcare. *Systematic Reviews* 2013;**2**:19. doi:10.1186/2046-4053-2-19

27 Parsons JA, Boydell KM. Arts-based research and knowledge translation: Some key concerns for health-care professionals. *Journal of Interprofessional Care* 2012;**26**:170–2. doi:10.3109/13561820.2011.647128

28 Jones K. A biographic researcher in pursuit of an aesthetic: The use of arts-based (re) presentations in "performative" dissemination of life stories. *Qualitative Sociology Review* 2006;**2**:66–85.

29 Gardner H. Taking a multiple intelligences (MI) perspective. *Behavioral and Brain Sciences* 2017;**40**.

30 Theatre. Oxford English dictionary. n.d.https://en.oxforddictionaries.com/definition/theatre

31 Colantonio A, Kontos PC, Gilbert JE, *et al.* After the crash: Research-based theater for knowledge transfer. *Journal of Continuing Education in the Health Professions* 2008;**28**:180–5.

32 Cheadle A, Cahill C, Schwartz PM, *et al.* Engaging Youth in Learning about Healthful Eating and Active Living: An Evaluation of Educational Theater Programs. *Journal of Nutrition Education and Behavior* 2012;**44**:160–5. doi:10.1016/j.jneb.2011.06.005

33 Pelto PJ, Singh R. Community Street Theatre as a Tool for Interventions on Alcohol Use and Other Behaviors Related to HIV Risks. *AIDS and Behavior* 2010;**14**:147–57. doi:10.1007/s10461-010-9726-8

34 Islam KS, Sachchu SA, Sandani R, *et al.* Using Village Theatre to Increase Knowledge about Eclampsia in Bangladesh. *Journal of Obstetrics and Gynaecology Research* 2001;**27**:199–204. doi:10.1111/j.1447-0756.2001.tb01251.x

35 Fraser KD, al Sayah F. Arts-based methods in health research: A systematic review of the literature. *Arts & Health* 2011;**3**:110–45. doi:10.1080/17533015.2011.561357

36 Gray RE, Sinding C, Fitch MI. Navigating the Social Context of Metastatic Breast Cancer: Reflections on a Project Linking Research to Drama. *Health (London)* 2001;**5**:233–48. doi:10.1177/136345930100500205

37 Kontos PC, Naglie G. Expressions of personhood in Alzheimer's: moving from ethnographic text to performing ethnography. *Qualitative Research* 2006;**6**:301–17. doi:10.1177/1468794106065005

38 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International journal of social research methodology* 2005;**8**:19–32.

39 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implementation Science* 2010;**5**:69. doi:10.1186/1748-5908-5-69

40 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and ExplanationThe PRISMA-ScR Statement. *Annals of Internal Medicine* 2018;**169**:467–73. doi:10.7326/M18-0850

41 *Covidence systematic review software*. Melbourne, Australia: : Veritas Health Innovation www.covidence.org

42 Peters DH, Adam T, Alonge O, *et al.* Implementation research: what it is and how to do it. *BMJ* 2013;**347**:f6753. doi:10.1136/bmj.f6753

43 Glasgow RE, Klesges LM, Dzewaltowski DA, *et al.* Evaluating the impact of health promotion programs: using the RE-AIM framework to form summary measures for decision making involving complex issues. *Health Education Research* 2006;**21**:688–94. doi:10.1093/her/cyl081

SUPPLEMENTARY FILE 1 - SEARCH STRING:

(MH "Drama+" OR MH "Narrative Medicine+" OR TI theatre OR AB theatre OR TI theater OR AB theater OR TI playwriting or AB playwriting OR TI storytelling OR AB storytelling OR TI "interactive theatre" OR AB "interactive theatre" OR TI "interactive theater" OR AB "interactive theater") AND (MH Education OR SH education OR MH "Teaching Materials+" OR MH "Inservice Training+" OR MH "Staff Development+" OR MH "Health Plan Implementation+" OR MH "Quality Improvement+" OR TI workshop OR AB workshop OR TI seminar OR AB seminar OR TI training OR AB training OR TI implementation OR AB implementation OR TI "knowledge translation" OR AB "knowledge translation" OR MH "Health, Knowledge, Attitudes, Practice+" OR MH "Clinical Competence+" OR MH "Education, Continuing+" OR MH "Professional Role+" OR MH "Professional Competence+" OR MH "Guideline Adherence+" OR MH "Attitude of Health Personnel+" OR MH "Self Efficacy+")

Supplementary file 2 – Sample data extraction Template

Study (Author/Year)	Country	Study Design	Sample Size	Topic area	Theatre type	Theatre Description	Outcomes Assessed	Assessment tools	Findings

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	5-9
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	10-11
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	n/a – in progress
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	11-12
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	11
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	11
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	12
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	13
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	12, 22
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	13-14

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	14
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	n/a
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	n/a
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	n/a
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	n/a
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	n/a
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	n/a
Limitations	20	Discuss the limitations of the scoping review process.	n/a
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	n/a
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	16

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann Intern Med. ;169:467–473. doi: 10.7326/M18-0850

BMJ Open

Using theatre as an arts-based knowledge translation strategy for health-related information: a scoping review protocol

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2019-032738.R1
Article Type:	Protocol
Date Submitted by the Author:	11-Sep-2019
Complete List of Authors:	Hall, Amanda; Memorial University of Newfoundland, Medicine Furlong, Bradley; Memorial University of Newfoundland, Medicine Pike, Andrea; Memorial University of Newfoundland, Medicine Logan, Gabrielle; Memorial University of Newfoundland, Medicine Lawrence, Rebecca; Memorial University of Newfoundland, Medicine; Memorial University of Newfoundland, Psychology Ryan, Alexandra; Memorial University of Newfoundland, Medicine; Memorial University of Newfoundland, School of Human Kinetics Etchegary, Holly; Memorial University, Clinical Epidemiology Hennessey, Todd; Memorial University of Newfoundland - Grenfell Campus, School of Fine Arts Toomey, Elaine; University College Dublin,
Primary Subject Heading:	Evidence based practice
Secondary Subject Heading:	Communication
Keywords:	Knowledge translation, Scoping review, Theater, Research use

TITLE: Using theatre as an arts-based knowledge translation strategy for health-related information: a scoping review protocol

AUTHORS: Amanda Hall,[1] Bradley Furlong,[1] Andrea Pike,[1] Gabrielle Logan,[1] Rebecca Lawrence,[1,2] Alexandra Ryan,[1,3] Holly Etchegary,[4] Todd Hennessey,[5] Elaine Toomey[6,7]

AFFILIATIONS:

[1]Primary Healthcare Research Unit, Faculty of Medicine, Memorial University, Newfoundland, Canada

[2]Department of Psychology, Memorial University, St. John's, Newfoundland, Canada

[3]School of Human Kinetics, Memorial University, St. John's, Newfoundland, Canada

[4] Faculty of Medicine, Memorial University, St. John's, Newfoundland, Canada

[5]School of Fine Arts, Grenfell Campus, Memorial University, Corner Brook, Newfoundland, Canada

[6]Health Behaviour Change Research Group, National University of Ireland Galway, Galway, Ireland

[7]Cochrane Ireland, National University of Ireland Galway, Galway, Ireland

CORRESPONDING AUTHOR:

Andrea Pike

Primary Healthcare Research Unit, Memorial University
Health Sciences Centre
300 Prince Phillip Drive
St. John's, NL Canada
A1B 3V6
andrea.pike@med.mun.ca
709-777-6823

WORD COUNT: 2983 words (excluding title page, abstract, references, figures, and tables)

ABSTRACT

Introduction: Substantial delays in translating evidence to practice mean that many beneficial and vital advances in medical care are not being used in a timely manner. Traditional Knowledge Translation (KT) strategies have tended to target academics by disseminating findings in academic journals and at scientific conferences. Alternative strategies, such as theatre-based KT, appear to be effective at targeting broader audiences. The purpose of this scoping review is to collate and understand the current state of science on the use of theatre as a KT strategy. This will allow us to identify gaps in literature, determine the need for a systematic review, and develop additional research questions to advance the field.

Methods and analysis

This review will follow established scoping review methods outlined by Arksey and O'Malley in conjunction with enhanced recommendations made by Levac, Colquhoun, and O'Brien. The search strategy, guided by an experienced librarian, will be conducted in PubMed, CINHAL, and OVID. Study selection will consist of three stages: (1) initial title and abstract scan by one author to remove irrelevant articles and create a shortlist for double-screening, (2) title and abstract scan by two authors, (3) full-text review by two authors. Included studies will report specifically on the use of theatre as means of KT of health-related information to any target population. Two reviewers will independently extract and chart the data using a standardized data extraction form. Descriptive statistics will be used to produce numerical summaries related to study characteristics, KT strategy characteristics and evaluation characteristics. For those studies that included an evaluation of the theatre production as a KT strategy, we will synthesize the data according to outcome.

Ethics and Dissemination

Ethical approval was not required for this study. Results will be published in relevant journals, presented at conferences, and distributed via social media.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This protocol will follow the recommended guidance for scoping reviews to ensure accuracy, clarity, and reproducibility.
- Our team is a multidisciplinary collaboration between experts in the areas of systematic and scoping reviews and application of knowledge translation strategies and arts-based practices to facilitate high-level discussion between fields to ensure accurate and robust interpretation of the findings.
- The review topic and objectives were co-developed amongst relevant knowledge users.
- Due to the broad nature of scoping reviews there will be no quality assessment of included studies.
- Only peer-reviewed literature will be considered in this review.

INTRODUCTION

Evidence practice gap

Evidence-practice gaps, defined as the disparity between research evidence and usual clinical practice,[1] pose a significant problem for healthcare systems and the quality of care they provide to patients. Numerous clinical audits across several areas of healthcare have identified a lack of adherence to clinical practice guidelines, resulting in the underuse of evidence-based interventions or over-use of outdated research.[2–6] This issue is widespread, and research across multiple countries repeatedly shows that patients are receiving unsuitable and outdated care, which in certain cases can be harmful.[7] For example, poor staff adherence to evidence-based infection prevention practices and hand hygiene practices in hospitals has been linked with healthcare-associated infections which are associated with patient mortality rates varying from 5% to 35%.[8–12] In a 2011 review, Morris et al. identified that 17 years was the most commonly reported average time-frame for the translation of health research to practice.[13] These substantial delays in translating evidence to practice means that many beneficial and vital advances in medical care are not being used in a timely manner. This presents a real and direct risk to the quality of care provided to patients and also to overall patient safety. Translating evidence into practice to achieve better patient outcomes is therefore becoming a key priority for many health researchers, heath funders and health systems.

Much of the delay in translation of evidence into practice has been attributed to research waste.[2–6] In 2009 it was estimated that about 85% of research investment was wasted and could have been better spent to ensure the transferability of research to practice.[14,15] In 2016, a review of what funders, regulators, academic institutions and researchers were doing

to address waste found an improvement in the generation of clinically-relevant research questions and adherence to standards for research reporting and rigour.[16] However, less has been done to ensure the translation of research findings to practice.[16] The authors recommended that researchers should systematically plan to use knowledge translation (KT) strategies to more effectively disseminate their research for knowledge users.[16]

Knowledge translation

KT is the use of systematic and iterative processes to translate evidence-based research findings into practice, and has gained traction over the last decade.[1,17,18] However, the field of KT is still emerging with little consensus on the most effective approaches. This is evidenced by a recent scoping review that identified 592 studies (published in the last 20 years) that used 159 theories, frameworks and models to underpin their KT strategies with very limited information on how these were actually applied.[19] To provide more clear direction, several KT planning guides have also been developed to help researchers and organisations think about how best to translate research findings for knowledge users.[17,20] For example, Ian Graham produced "Guide to Knowledge Translation Planning at CIHR: Integrated and End-of-Grant Approaches" which helps researchers identify their target knowledge users and their KT goals (e.g. to increase awareness, knowledge, or skills or to promote behaviour change) and then consider what KT strategies to use to achieve these goals.[17]

Knowledge translation strategies

KT strategies (sometimes referred to as interventions) are overt activities or devices that facilitate or encourage the use of research to achieve clinical practice change.[21] There are numerous KT strategies to choose from, as evidenced in recent reviews which identified over 30

different strategies within the literature.[22–25] Traditional KT strategies have tended to focus on publishing research findings in academic journals and presenting results at scientific conferences. This approach is typically used to inform other researchers and academics about the latest advances in health research with the goal of advancing science. However, in recent years, the importance of translating health research across all stakeholder groups has been recognised[17,26] to facilitate better uptake of research into practice and reduction of research waste, and to achieve broader and greater research impact. As such, KT has evolved and broadened in scope to include translation and dissemination of evidence for a wider range of knowledge-users (e.g. clinicians, policy makers, patients, and the public). Since these audiences have different knowledge needs and will use the information for different purposes, alternative KT strategies have been proposed. Alternative KT strategies typically include activities and devices such as plain language summaries, evidence briefs, practice guidelines, educational outreach, mass media, toolkits, opinion leaders or financial incentives. Increasingly, healthcare researchers are also using arts-based KT strategies to translate and disseminate their findings, however much less is known about how this is used.

Arts-based KT

Arts-based KT strategies can be broadly grouped into 3 categories, visual (photographs, drawings), literary (poetry) or performance (e.g. theatre, narrative based arts) and are used to translate key, educative messages to broader audiences.[27] Arts-based KT is a multidisciplinary approach that brings together professionals with a variety of different expertise. This is a considered a strength that may result in unique and improved ways of disseminating research-based evidence that can appeal to more diverse audiences than traditional scientific

presentations and posters.[28] For example, they are likely to garner more attention, stimulate affective responses, and incite discussion and story sharing between those involved.[27–29] They appear to be especially effective at targeting broader audiences because they are accessible to the general public, can be enjoyed without any particular expertise[27] and cater to a variety of different learning styles.[30] For this reason, individuals of different ages, genders, backgrounds, and cultures can often relate to these art forms, which may heighten their understanding and acceptance of any message being conveyed.[27]

Theatre-based KT

Theatre is defined as a presentation or activity that uses drama to engage and entertain an audience [31]. This medium has been commonly used as an educational tool in other disciplines such as education and sociology for its ability to engage audiences on both affective and cognitive levels, a process that has been found to be central to the success of educational interventions.[28,32] In addition, some theatre productions allow for audience participation which places individuals directly in the context of a specific situation, resulting in stronger emotional responses and attention.[33] Theatre may be an especially effective KT strategy for public audiences because it is a commonplace and culturally acceptable activity in many countries and communities.[34] It is also often feasible in low-income areas where other forms of media (e.g., television or radio) are inaccessible. For example, Islam et al.[35] found that only 0.4% of people in Bangladesh had access to television, so they used a village theatre production to convey information about eclampsia. This study found improved eclampsia knowledge using a pre-post survey.[35] A previous review of the literature up to 2009 found 7 studies that used arts-based methods of drama or theatre for disseminating health research.[36] The theatre

productions were used to impart knowledge about chronic conditions, cancer, HIV, dementia and traumatic brain injury through multi-sensory mechanisms (i.e. by watching, hearing, and feeling the message as opposed to solely reading journal publications, pamphlets, or conference proceedings).[28,32,36–38] While the review highlighted that theatre was one of the arts-based strategies used in health research it provided only a high level overview of these studies and thus did not provide sufficient detail about the development of the theatre production, methods of evaluation or the outcome measurement tools used to assess effectiveness. While, the interest in KT and using arts-based KT strategies such as theatre continues to grow the details on its intended aim, development, production, implementation and evaluation are still unknown. To date there has not been a review that has focused solely on the arts-based strategy of theatre.

Purpose

This will be the first review to collate and understand the current state of science on the use of theatre as a KT strategy for dissemination. This review will act as the foundation for a potential new program of research regarding performance arts based KT strategies, thus, we have chosen to use a scoping review methodology. By doing so, it will allow us to first obtain a broad and general understanding of the use of theatre as a KT strategy for health-related information. We will investigate the types of theatre being used, populations being targeted, messages being conveyed, what outcomes are being assessed, and the methods of evaluation. In this way, we can identify current gaps in literature, determine the need for a full systematic review of effectiveness and develop additional research questions and methodologies to advance the field.

METHODS AND ANALYSIS

To ensure the accuracy and reproducibility of this study, we will follow the six-step scoping review guidance outlined by Arksey and O'Malley[39] in conjunction with enhanced recommendations to this guidance made by Levac, Colquhoun, and O'Brien.[40] We will also follow the Preferred Reporting Items for Systematic Review and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) checklist to ensure rigour.[41]

Stage 1: Developing the research question

The purpose of this review is to understand the "state of science" regarding the use of theatre as a KT strategy for health-related information. By this we mean establishing a foundational understanding of how theatre has been used and evaluated as a KT strategy, including target audiences, health topics addressed, types of theatre employed, and the research study designs and outcomes assessed. This will enable us to identify the knowledge gaps regarding the use and evaluation methods of theatre as a strategy for KT and provide guidance and suggestions for future research.

To meet our objective of understanding the state of science for the arts-based KT strategy of theatre used in a health research context, we will ask the following questions related to population, concept, and context:

Population

- What audiences are being targeted?

Concept:

- What types of theatre are being used for KT of health information?
- How has the theatre production been developed, produced and implemented?

Context:

- What types of health messages are being conveyed?
- What is the KT aim(s) of theatre (e.g. awareness, knowledge, skill development, behaviour change)?
- How has the theatre-based KT strategy been evaluated in terms of outcomes and study design?

Stage 2: Identifying relevant studies

The search strategy for this review was informed by strategies in previous systematic reviews on KT strategies.[21,27] The search strategy was reviewed and adapted by the research team in collaboration with an experienced librarian to combine the KT string with terms for 'Theatre'. The final search strategy was developed iteratively with the research team and can be found in Supplementary file 1. The search will be conducted from inception in the following databases: PubMed, CINHAL, and OVID. These databases were chosen to capture a comprehensive body of literature from health sciences disciplines. The searches will not be limited by language; for non-English studies a combination of freely available online language translation software programs and consultation with colleagues within our respective institutions will assist with translation to English. Reference lists of key articles will be hand-searched by the review team to capture any papers missed in the electronic searches. The search results will be imported into Covidence review management software[42] and duplicate citations removed.

Stage 3: Study selection

Study selection will consist of three stages: (1) an initial title and abstract scan by one author to remove irrelevant articles and create a shortlist for double screening, (2) a short-list of titles/abstracts by two authors followed by (3) a full-text review by two authors. For duplicate screening, two authors will independently screen each citation and document their results on the review spreadsheet. They will also meet multiple times throughout stage 2 (title/abstract review) to discuss more complicated criteria as needed. During this process studies will be coded as “include”, “exclude”, or “unclear”. Studies marked “include” or “unclear” will be retrieved for full-text review using Covidence online software. Prior to full text review, reviewers will meet again to discuss uncertainties for inclusion or exclusion criteria. Studies will be coded in the same way as in title and abstract screening, in preparation for data extraction.

Studies that report specifically on the use of theatre as means of KT of health-related information that is derived from health research sources (published peer-reviewed research or practice guidelines) with any target population (public, patients, workers, care providers) will be included in the review. Theatre productions that are based on information sources not supported by research such as opinion papers or magazine articles in which the supporting research cannot be verified will be excluded. Studies in any language will be included proving an accurate translation can be performed. All study designs will be included ranging from descriptive only studies to evaluation studies (including feasibility, process, effectiveness or cost related evaluations), only peer-reviewed studies will be included. See Supplementary file 2 for a sample of the inclusion/exclusion form.

Stage 4: Charting the data

A standardized data extraction form will be developed in Excel and pilot tested by the review team to allow reviewers to systematically chart the data. Supplementary file 3 includes a sample data abstraction chart highlighting the data variables that will be extracted from each of the articles included in the review. These include (i) study characteristics (e.g., publication year, country of origin); (ii) KT strategy characteristics (the target audience(s), goal(s), and how the theatre productions were developed and implemented; and (iii) evaluation characteristics (e.g. outcome variables, assessment methods, study designs). Two reviewers will independently extract data on the first 10% of included studies using the data extraction form. Reviewers will then meet with the lead investigator and discuss any uncertainties encountered during extraction, additional data elements they feel should be included, or any other feedback on the data extraction form to determine if the form needs to be refined. The remaining 90% of studies will be extracted by one reviewer.

Stage 5: Collating, summarizing, and reporting the results

We will use descriptive statistics to produce numerical summaries related to study characteristics, KT strategy characteristics and evaluation characteristics. We will provide a more detailed narrative synthesis for the theatre KT strategy; including the development of the theatre script (e.g. how the health information was sourced, how key messages were distilled, who was involved in the key message process, how the key messages were integrated into the theatre script, if integrity of the key messages was maintained in the script and details about how long this process took and how much it cost to develop) and production details (e.g. how many actors, duration, cost, etc.) as well as enactment details (e.g. involvement of consumers

or audience). Further, we will use the data extracted to classify the styles of theatre into 4 arts-based KT categories using the classification schema of arts-based knowledge translation strategies as reported by Archibald and colleagues.[43] This schema aims to provide a description of the arts-based KT strategy based on where it sits along two continuums; passive vs active and ambiguous versus precise.[43] For those studies that included an evaluation of the theatre production as a KT strategy, we will synthesize the data according to outcome. For example, we will provide a descriptive summary of all studies that evaluated outcomes in two main areas: implementation and effectiveness. Implementation outcomes of KT strategies relate to acceptability, reach, appropriateness, feasibility, fidelity, and implementation cost. Effectiveness variables include those relating to KT aims; awareness, knowledge, skills, and behaviour change.[44,45]

This stage of data extraction and summarising will be carried out by two, independent reviewers who will compare and consolidate their results through consensus. In cases where there is disagreement regarding data extraction or analysis that cannot be resolved through consensus, a third senior reviewer will help to resolve the conflict. The summary of data will highlight the similarities, patterns, and differences in the way theatre is being used for the knowledge translation of health information as reported in the literature. While details about those studies that evaluated theatre-based KT strategies will be summarized, assessment of quality will not be undertaken as quality assessment is beyond the scope of this review. Considering these results, suggestions for future research evaluating theatre as a KT strategy for disseminating key messages from health research will be discussed.

Stage 6: Consultation

Our team includes representatives from the fields of KT, implementation science, theatre-arts, psychology and behaviour change research, clinical trials and health services research. We have co-developed the topic and research questions for the scoping review with all members of the research team. We will develop a consultation panel including representatives from the Canadian Strategy for Patient Oriented Research KT National Working Group, KT Canada and the Theatre Arts programs at Memorial University, the University of Alberta, and the University of Toronto. Consultation will pertain to (i) identifying if any important studies were missed in the search strategy, (ii) interpreting the findings to ensure validity and that any KT or theatre expert perspectives are represented accurately.

Patient and Public Involvement Statement

Members of the public were first involved in this work by way of contributing to a priority setting exercise to select which arts-based KT strategies were important and of interest to the public. Members of the public were consulted to help co-produce the research question by helping to set the eligibility criteria for the population and outcome terms of the question; thereby helping to set the scope for the research question. Members of the public will be invited to review a plain language summary, an infographic and short video using adobe spark that we will use to present the key findings of the review. These will be disseminated to the public via our social medial channels and at local or international public engagement sessions.

ETHICS AND DISSEMINATION

This will be the first comprehensive review of the use of theatre as a strategy for KT in healthcare settings. It will form the foundation for a future program of interdisciplinary work between researchers in health services, KT and implementation science, KT change agents, educators in the arts, and research-based theatre performers. Ethical approval is not required for this scoping review. The search strategy is planned to be completed by September 2019 and the results by June 2020. We plan to disseminate the results in several ways: publication in relevant journals; presentation at relevant conferences (e.g. KT Canada, INVOLVE UK); via social media using short summaries for non-academic audiences including a plain language summary, an infographic to depict findings and a short video with the research team to explain the state of science on using theatre as a KT strategy.

ACKNOWLEDGEMENTS

We acknowledge Ms. Michelle Swab, the librarian at Memorial University for assisting with adapting the search strategy used in this review. We also acknowledge the Strategy for Patient-Oriented Research (SPOR) Primary Healthcare Research and Integration to Improve Health System Efficiency (PRIIME) initiative for providing research support in the way of four part-time studentships that involve undertaking training to assist with data screening, collection and synthesis on various scoping reviews that will impact better translation of evidence into practice.

AUTHOR'S CONTRIBUTIONS

AH, ET, and TH conceptualized and designed this scoping review. AH, ET, BF, and AP drafted the protocol. AH, GL, RL, AR, and BF developed the search strategy and conducted the search. All authors reviewed provided feedback on the methods and analysis as well as the manuscript. ET, AP, and HE reviewed and provided feedback on the manuscript on both content and clarity. All authors provided their approval to publish this manuscript.

FUNDING STATEMENT

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

COMPETING INTERESTS STATEMENT

The authors have no competing interests to declare.

REFERENCES

1 Graham ID, Logan J, Harrison MB, *et al.* Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions* 2006;**26**:13–24. doi:10.1002/chp.47

2 Chalmers I, Bracken MB, Djulbegovic B, *et al.* How to increase value and reduce waste when research priorities are set. *The Lancet* 2014;**383**:156–65.

3 Ioannidis JP, Greenland S, Hlatky MA, *et al.* Increasing value and reducing waste in research design, conduct, and analysis. *The Lancet* 2014;**383**:166–75.

4 Salman RA-S, Beller E, Kagan J, *et al.* Increasing value and reducing waste in biomedical research regulation and management. *The Lancet* 2014;**383**:176–85.

5 Chan A-W, Song F, Vickers A, *et al.* Increasing value and reducing waste: addressing inaccessible research. *The Lancet* 2014;**383**:257–66.

6 Glasziou P, Altman DG, Bossuyt P, *et al.* Reducing waste from incomplete or unusable reports of biomedical research. *The Lancet* 2014;**383**:267–76.

7 Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Medical care* 2001;**39**:II–46.

8 Flodgren G, Conterno LO, Mayhew A, *et al.* Interventions to improve professional adherence to guidelines for prevention of device-related infections. *Cochrane Database of Systematic Reviews* 2013.

9 Gammon J, Morgan-Samuel H, Gould D. A review of the evidence for suboptimal compliance of healthcare practitioners to standard/universal infection control precautions. *Journal of Clinical Nursing* 2008;**17**:157–67. doi:10.1111/j.1365-2702.2006.01852.x

10 Pittet D, Donaldson L. Challenging the world: patient safety and health care-associated infection. *International Journal for Quality in Health Care* 2006;**18**:4–8. doi:10.1093/intqhc/mzi093

11 Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Infection Control & Hospital Epidemiology* 2002;**23**:S3–40.

12 Osborne S. Influences on compliance with standard precautions among operating room nurses. *American Journal of Infection Control* 2003;**31**:415–23. doi:10.1067/mic.2003.68

13 Morris ZS, Wooding S, Grant J. The answer is 17 years, what is the question: understanding time lags in translational research. *J R Soc Med* 2011;**104**:510–20. doi:10.1258/jrsm.2011.110180

14 Chen Y, Yang K. Avoidable waste in the production and reporting of evidence. *The Lancet* 2009;**374**:786. doi:10.1016/S0140-6736(09)61591-9

15 Chalmers I, Glasziou P. Avoidable waste in the production and reporting of research evidence. *The Lancet* 2009;**374**:86–9.

16 Moher D, Glasziou P, Chalmers I, *et al.* Increasing value and reducing waste in biomedical research: who's listening? *The Lancet* 2016;**387**:1573–86.

17 Canadian Institutes of Health Research. Guide to knowledge translation planning at CIHR: Integrated and end-of-grant approaches. 2012.http://www.cihr-irsc.gc.ca/e/documents/kt_lm_ktplan-en.pdf

18 Grimshaw JM, Eccles MP, Lavis JN, *et al.* Knowledge translation of research findings. *Implementation Science* 2012;**7**:50. doi:10.1186/1748-5908-7-50

19 Strifler L, Cardoso R, McGowan J, *et al.* Scoping review identifies significant number of knowledge translation theories, models, and frameworks with limited use. *Journal of Clinical Epidemiology* 2018;**100**:92–102. doi:10.1016/j.jclinepi.2018.04.008

20 Alberta Addiction and Mental Health Research Partnership Program. Knowledge Translation Evaluation Planning Guide. 2014.https://www.albertahealthservices.ca/assets/info/res/mhr/if-res-mhr-kt-evaluation-guide.pdf

21 Scott SD, Albrecht L, O'Leary K, *et al.* A protocol for a systematic review of knowledge translation strategies in the allied health professions. *Implementation Science* 2011;**6**:58. doi:10.1186/1748-5908-6-58

22 Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *The Lancet* 2003;**362**:1225–30. doi:10.1016/S0140-6736(03)14546-1

23 Scott SD, Albrecht L, O'Leary K, *et al.* Systematic review of knowledge translation strategies in the allied health professions. *Implementation Science* 2012;**7**:70. doi:10.1186/1748-5908-7-70

24 Albrecht L, Archibald M, Snelgrove-Clarke E, *et al.* Systematic Review of Knowledge Translation Strategies to Promote Research Uptake in Child Health Settings. *Journal of Pediatric Nursing* 2016;**31**:235–54. doi:10.1016/j.pedn.2015.12.002

25 Effective Practice and Organisation of Care (EPOC). EPOC Taxonomy. 2015.https://epoc.cochrane.org/epoc-taxonomy

26 involve. We Believe that People Should be at the Heart of Decision-Making. involve. http://www.involve.org.uk/

27 Scott SD, Brett-MacLean P, Archibald M, *et al.* Protocol for a systematic review of the use of narrative storytelling and visual-arts-based approaches as knowledge translation tools in healthcare. *Systematic Reviews* 2013;**2**:19. doi:10.1186/2046-4053-2-19

28 Parsons JA, Boydell KM. Arts-based research and knowledge translation: Some key concerns for health-care professionals. *Journal of Interprofessional Care* 2012;**26**:170–2. doi:10.3109/13561820.2011.647128

29 Jones K. A biographic researcher in pursuit of an aesthetic: The use of arts-based (re) presentations in "performative" dissemination of life stories. *Qualitative Sociology Review* 2006;**2**:66–85.

30 Gardner H. Taking a multiple intelligences (MI) perspective. *Behavioral and Brain Sciences* 2017;**40**.

31 Theatre. Oxford English dictionary. n.d.https://en.oxforddictionaries.com/definition/theatre

32 Colantonio A, Kontos PC, Gilbert JE, *et al.* After the crash: Research-based theater for knowledge transfer. *Journal of Continuing Education in the Health Professions* 2008;**28**:180–5.

33 Cheadle A, Cahill C, Schwartz PM, *et al.* Engaging Youth in Learning about Healthful Eating and Active Living: An Evaluation of Educational Theater Programs. *Journal of Nutrition Education and Behavior* 2012;**44**:160–5. doi:10.1016/j.jneb.2011.06.005

34 Pelto PJ, Singh R. Community Street Theatre as a Tool for Interventions on Alcohol Use and Other Behaviors Related to HIV Risks. *AIDS and Behavior* 2010;**14**:147–57. doi:10.1007/s10461-010-9726-8

35 Islam KS, Sachchu SA, Sandani R, *et al.* Using Village Theatre to Increase Knowledge about Eclampsia in Bangladesh. *Journal of Obstetrics and Gynaecology Research* 2001;**27**:199–204. doi:10.1111/j.1447-0756.2001.tb01251.x

36 Fraser KD, al Sayah F. Arts-based methods in health research: A systematic review of the literature. *Arts & Health* 2011;**3**:110–45. doi:10.1080/17533015.2011.561357

37 Gray RE, Sinding C, Fitch MI. Navigating the Social Context of Metastatic Breast Cancer: Reflections on a Project Linking Research to Drama. *Health (London)* 2001;**5**:233–48. doi:10.1177/136345930100500205

38 Kontos PC, Naglie G. Expressions of personhood in Alzheimer's: moving from ethnographic text to performing ethnography. *Qualitative Research* 2006;**6**:301–17. doi:10.1177/1468794106065005

39 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International journal of social research methodology* 2005;**8**:19–32.

40 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implementation Science* 2010;**5**:69. doi:10.1186/1748-5908-5-69

41 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and ExplanationThe PRISMA-ScR Statement. *Annals of Internal Medicine* 2018;**169**:467–73. doi:10.7326/M18-0850

42 *Covidence systematic review software*. Melbourne, Australia: : Veritas Health Innovation www.covidence.org

43 Archibald MM, Caine V, Scott SD. The development of a classification schema for arts-based approaches to knowledge translation. *Worldviews Evid Based Nurs* 2014;**11**:316–24. doi:10.1111/wvn.12053

44 Peters DH, Adam T, Alonge O, *et al.* Implementation research: what it is and how to do it. *BMJ* 2013;**347**:f6753. doi:10.1136/bmj.f6753

45 Glasgow RE, Klesges LM, Dzewaltowski DA, *et al.* Evaluating the impact of health promotion programs: using the RE-AIM framework to form summary measures for decision making involving complex issues. *Health Education Research* 2006;**21**:688–94. doi:10.1093/her/cyl081

SUPPLEMENTARY FILE 1 - SEARCH STRING:

(MH "Drama+" OR MH "Narrative Medicine+" OR TI theatre OR AB theatre OR TI theater OR AB theater OR TI playwriting or AB playwriting OR TI storytelling OR AB storytelling OR TI "interactive theatre" OR AB "interactive theatre" OR TI "interactive theater" OR AB "interactive theater") AND (MH Education OR SH education OR MH "Teaching Materials+" OR MH "Inservice Training+" OR MH "Staff Development+" OR MH "Health Plan Implementation+" OR MH "Quality Improvement+" OR TI workshop OR AB workshop OR TI seminar OR AB seminar OR TI training OR AB training OR TI implementation OR AB implementation OR MH "Health, Knowledge, Attitudes, Practice+" OR MH "Clinical Competence+" OR MH "Education, Continuing+" OR MH "Professional Competence+" OR MH "Guideline Adherence+" OR MH "Attitude of Health Personnel+" OR MH "Self Efficacy+" OR TI (knowledge N2 (uptake OR utilization OR utilisation OR transfer OR mobilisation OR mobilization OR implementation OR dissemination OR diffusion* OR translation)) OR AB (knowledge N2 (uptake OR utilization OR utilisation OR transfer OR mobilisation OR mobilization OR implementation OR dissemination OR diffusion* OR translation)) OR TI "Public Health" OR AB "Public Health" OR MH "Public Health+")

SUPPLEMENTARY FILE 2 – EXAMPLE OF INCLUSION-EXCLUSION FORM THAT WILL BE ADAPTED FOR USE IN COVIDENCE

Characteristic	Review Inclusion Criteria	Yes/ No
Type of study	Included study types are: • Experimental (e.g. Randomised trial, non-randomised trial, Controlled before-after study, Interrupted time series) • Observational analytic or descriptive (e.g. cohort, cross sectional, case report) • Qualitative (focus groups, interview-based studies) • Methodological (e.g. description of how the KT strategy (theatre) was developed)	
Participants (target audience)	The target audience for the theatre can be any knowledge user of health research (e.g. patients, public, clinicians, policy makers, health system managers and researchers)	
Type of KT strategy	Intervention is a theatre-based drama.	
	Content is related to health information.	
	Health information is derived from published research or clinical guidelines. Opinion pieces are not eligible.	
	Aim of the drama is to translate health-related research information for a knowledge user group. The goal could vary including and one of the following: to impart general awareness on a topic, to increase knowledge or skills, to change attitudes or behaviour.	
	Can be delivered in person or via a video recording of the drama.	
Types of outcome measures	All outcomes that would be related to evaluation of the theatre as a KT strategy are eligible. For this scoping review we are also including descriptive studies only, thus, an evaluation and outcome measures are not necessary to be eligible for inclusion in this review.	

SUPPLEMENTARY FILE 3 – SAMPLE OF DATA EXTRACTION ELEMENTS USED TO CREATE A DATA EXTRACTION FORM IN EXCEL

Category	Data elements	Description
Article details	Authors	Who are the listed authors?
	Article type	Is the article an empirical study, case study, commentary, brief report, etc.
	Year	When was the article published?
	Country	What country did the article come from?
Study details	Rationale	What was the stated rationale for the study?
	Aim	What was the purpose of the study?
Health Knowledge to be translated	Health topic	What health topic was the focus of the theatre-based KT?
	Information source	How did they obtain the health information that was translated? Did they use existing guidelines? Generate new knowledge from surveys, or focus groups?
	Translation of health knowledge into Key findings	What were the key research findings? Who was involved in the process of creating the key findings? Original researchers?

	Information/content integrity	Was their credibility testing of the key messages with the researchers to ensure accuracy and integrity of the messages with research findings?
KT aim	Goal	What was the goal of the KT program? E.g. To increase awareness, to teach skills, to change practice.
Intervention information	Theatre type	What type of theatre was used?
	Production development	How was the theatre production developed?
	Enactment	How was it enacted? E.g. were audience members involved or passive participants?
Target knowledge user population	Audience	What was the target audience of the KT program?
Evaluation	Study Design	How was the KT evaluated? What type of research design was used to evaluate the KT strategy?
	Outcomes	What outcomes were assessed to evaluate the KT strategy? What outcome assessment tools were used?
	Data collection	How did they collect study data and at what timepoints were data collected?
Findings	Results	What was the summary of the findings or results of the study?

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	5-9
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	10-11
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	n/a – in progress
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	11-12
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	11
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Supplementary File
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	12 and Supplementary File
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	13 and Supplementary File
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	12, 22
Critical appraisal of individual	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe	13-14

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
sources of evidence§		the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	14
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	n/a
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	n/a
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	n/a
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	n/a
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	n/a
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	n/a
Limitations	20	Discuss the limitations of the scoping review process.	n/a
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	n/a
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	16

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann Intern Med. ;169:467–473. doi: 10.7326/M18-0850