

ORIGINAL ARTICLE

Engaging knowledge users in a systematic review on the comparative effectiveness of geriatrician-led models of care is possible: A cross-sectional survey using the Patient Engagement Evaluation Tool

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Abstract

Background: A systematic review (SR) was conducted to evaluate the comparative effectiveness of geriatrician-led models of care, and an integrated knowledge translation (iKT) approach facilitated SR relevance. Activities to engage knowledge users (KUs) in the SR were evaluated for perceived level of engagement.

Study Design and Setting: KUs included patients, caregivers, geriatricians, and policymakers from three Canadian provinces. Activities included 1) modified Delphi to select outcomes; 2) cross-sectional survey to select outcome measures, and 3) in-person meeting to discuss SR findings. KU engagement was assessed using the Patient Engagement Evaluation Tool (PEET) after the second and third activities. KUs rated the extent of successful engagement using a 7-point Likert scale ranging from “no extent” to “very large extent.”

Results: In total, 15 KUs completed the PEET: eight geriatricians, four policymakers, two patients, and one caregiver. Median engagement scores across all activities (median range: 6.00–6.50) indicated that KUs felt engaged. Differences were observed for activity type; perceived engagement at in-person meeting resulted in higher meta-criteria scores for trust ($P = 0.005$), legitimacy ($P = 0.003$), fairness ($P = 0.013$), and competency ($P = 0.035$) compared with online activities.

Conclusions: KUs can be engaged meaningfully in SR processes. Their perceived engagement was higher for in-person than for online activities. © 2019 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: Integrated knowledge translation; Knowledge user; Patient engagement; Systematic review

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data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all data and final responsibility for the decision to submit for publication.

Ethics approval: Ethical approval was obtained from St. Michael's Hospital (REB 16-320).

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What is new?**Key findings**

- Evaluation of engagement activities using the Patient Engagement Evaluation Tool (PEET) in a systematic review on the comparative effectiveness of geriatrician-led care models suggested that knowledge users (KUs) were engaged in the systematic review process. Engagement activities included participation in a modified Delphi, cross-sectional survey, and an in-person meeting. Higher engagement scores were observed for in-person activity than with online activities.

What this study adds to what is known?

- This is the first study to assess engagement in a systematic review that used three engagement activities in its conduct. KUs tailored the review by selecting outcomes and outcome measures and provided input on the interpretation of review findings. Use of the PEET survey enabled a quantitative evaluation of the perceived levels of engagement in the review activities.

What are the implications, and what should change now?

- Evaluation of KU engagement provides an indication of the success of an integrated knowledge translation approach. We found that in-person activities led to higher perceived KU engagement. More research is needed to evaluate different methods of engaging KUs in knowledge syntheses.

findings, 4) assist with dissemination activities, or 5) act as a review team member and participate in the conduct of the systematic review (e.g., screening of titles/abstracts or data abstraction) [7].

A scoping review of 91 studies on KU engagement in knowledge synthesis found that stakeholders were frequently involved in the interpretation of research findings or were consulted on the relevance of the research topic. Authors of knowledge syntheses used methods such as focus groups, interviews, surveys, nominal group, or Delphi approaches to engage [8] KUs. There are several stages in the conduct of a systematic review when KUs can be engaged and multiple methods are available to elicit their engagement; however, best practices for engagement are unknown.

Our goal was to quantify the perceived level of engagement experienced by KUs involved in different activities in the conduct of a systematic review on the comparative effectiveness of geriatrician-led models of care across health care settings. KUs had opportunities to participate in three engagement activities: 1) an online modified Delphi exercise to select preferred outcomes for inclusion in the review; 2) a cross-sectional survey to identify preferred metrics or measures for selected outcomes; and 3) a 1-day in-person meeting to interpret review findings and develop key messages for dissemination activities. We quantitatively evaluated KUs' engagement in the activities employed in the systematic review. Specifically, we measured differences in perceived engagement between strategies used and whether participation in one or more engagement activities improved degree of engagement. Considering the literature gap in engagement evaluation, our intent was to report our experience with using a newly developed tool, the Patient Engagement Evaluation tool (PEET), intended to measure the degree of successful engagement.

1. Background

Integrated knowledge translation (iKT) is an approach whereby researchers and knowledge users (KUs, i.e., individuals who may use research findings to make a decision) co-create knowledge [1–3]. The utility of KU engagement in research has been well established [4–6]. iKT is recommended when conducting systematic reviews as early engagement can focus the review on information relevant to KUs and has been suggested as a potential strategy for increasing research use [2].

Knowledge users can include patients, caregivers, clinicians, or policymakers, and there are a variety of ways to engage them in conduct of a systematic review. Keown et al. identified five opportunities to engage KUs in the systematic review process [7]. KUs can 1) consult on the importance of the research topic, 2) provide input on the stages of the review (i.e., refining research question, suggesting literature search terms, or developing inclusion criteria), 3) provide input on the interpretation of study

2. Methods*2.1. Systematic review methods*

Our systematic review was registered in PROSPERO (CDR 42014014008), and the protocol is published in an open source journal [9]. The methods are described here briefly. Several electronic databases (i.e., Medline, Embase, AgeLine, and Cochrane Library) were searched from inception to February 2018 to identify relevant citations. We included randomized controlled trials that examined the impact of geriatrician-led comprehensive geriatric assessment in older adults (≥ 65 years old) compared with other models of care. Comprehensive geriatric assessment is a multidisciplinary process focused on assessing and managing biomedical, psychosocial, functional, and social capacity of older adults with complex health conditions [10,11]. Outcomes for inclusion in the review were selected by KUs. Two reviewers independently assessed inclusion of

articles, abstracted data, and assessed risk of bias after completing a calibration exercise.

The systematic review was funded by a Canadian Institutes of Health Research (CIHR) Strategy for Patient-oriented Research (SPOR) Knowledge Synthesis grant (FRN 15083) in Primary and Integrated Health Care Innovation (PIHCI) network. To guide the review, we collaborated with partners in Alberta, Ontario, and Saskatchewan and established a steering committee consisting of three citizens (>65 years of age) and two clinicians.

2.2. Engagement activities

We defined KU engagement as including individuals who may be affected by the research findings through a process of meaningful involvement in making decisions about key aspects of the systematic review [2,4]. Three activities were used to engage KUs in the systematic review process including the refinement of study inclusion criteria, such as 1) the selection of optimal outcomes, 2) the selection of measures, and 3) the interpretation of findings to inform dissemination activities. The activities were sequential, and findings from each activity informed the next. First, the modified Delphi was conducted to select outcomes for inclusion in the review. Once the outcomes were selected, a cross-sectional survey was conducted with geriatricians to identify relevant outcome measures or metrics. The systematic review and network meta-analysis were then completed using the information obtained from the modified Delphi and survey. Finally, a 1-day in-person meeting was conducted to discuss the review findings with KUs and to incite their interpretation and development of the key messages for dissemination. Additional details of the modified Delphi and cross-sectional survey can be found in another publication [12].

2.3. Measuring degree of engagement

To assess the perceived level of engagement that KUs experienced, we adapted PEET, which had been developed by Moore et al. [13]. The tool quantifies engagement using evidence-informed criteria from the stakeholder engagement in comparative effectiveness research framework [14,15]. The stakeholder engagement in comparative effectiveness research framework is based on theories of democracy and deliberative participation; it identifies six meta-criteria considered critical for successful KU engagement. Meaningful engagement is predicted to occur when the research activity achieves high levels of trust, respect, accountability, legitimacy, competency, and fairness [16].

The PEET was validated for use in the development of clinical practice guidelines with adequate internal consistency ($\alpha = 0.88$), construct validity ($r = 0.48$), and evidence of face and content validity [13]. The tool consists of 17 items including four demographic questions and two questions for each meta-criterion with the exception

of accountability, which has three questions. The survey uses a 7-point adjectival Likert scale (ranging from 1 = no extent to 7 = very large extent) to rate each item. Survey questions were tailored to the engagement activities employed (Additional file A) and included a comment box for each question. Before administration, the modified survey was pilot tested using the Clinical Sensibility Questionnaire [17] by four individuals (two clinicians and two researchers) and then modified accordingly.

2.4. Recruitment of knowledge users

Recruitment of KUs for the first two engagement activities (i.e., the modified Delphi and cross-sectional survey) was described in a previous publication and is summarized here briefly [12]. Patients were recruited from outpatient clinics in Ontario, Canada. Caregivers were recruited through outpatient clinics and SPOR PIHCI support units from Alberta, Ontario, and Saskatchewan. SPOR PIHCI support units are focused on supporting the conduct of patient-oriented research in each province and engage patients and caregivers in research. Geriatricians were recruited through the Division of Geriatric Medicine, Department of Medicine at the University of Toronto in Ontario. Policymakers or health care managers were recruited from Health Quality Ontario; the Ontario Regional Geriatric Program; Council of Academic Hospitals of Ontario; and SPOR PIHCI support units in Alberta, Ontario, and Saskatchewan. Purposive sampling was used to ensure a range of KUs.

Knowledge users were recruited for the modified Delphi and the cross-sectional survey at different times, and at the end of the each activity, they were asked if they would be interested in participating in other activities related to the systematic review. Only those who responded “yes” and provided an email address were contacted to participate in this study. In addition, research team members and KUs identified through SPOR PIHCI support units (who were not previously engaged in other engagement activities) were recruited.

2.5. Ethics

Ethical approval was obtained from St. Michael’s Hospital (REB 16-320).

2.6. Data collection

PEET was administered online using Qualtrics (an online survey platform) [18] or in-person. KUs participating in the modified Delphi or the cross-sectional survey were sent a link to the survey, whereas those who attended the in-person meeting completed a paper version at the end of the meeting (Appendix 1). Reminder emails were sent one and three weeks after the online survey invitation [19].

3. Analysis

Likert ratings from the survey were converted to values, where 1 represented “no extent” and 7 represented “very large extent.” Ratings were then aggregated according to meta-criteria (i.e., respect, trust, accountability, legitimacy, competency, and fairness). Medians and interquartile ranges (IQRs) were calculated to provide summary estimates. Nonparametric tests were conducted using Mann–Whitney–Wilcoxon rank-sum tests to examine differences in perceived engagement in multiple activities (2 vs. 1 activity) as well as the type of activity (online vs. in-person). Median ratings greater than five for each meta-criterion were assumed to be indicative of high levels of perceived engagement. Analyses were conducted in Excel and the R statistical software, version 3.5.1 [20]. *P*-values < 0.05 were considered to be statistically significant.

4. Results

4.1. Participant characteristics

Overall, 23 participants from the modified Delphi and cross-sectional survey were eligible to participate, and 15 KUs completed the survey, which included eight geriatricians, four policymakers, two patients, and one caregiver (Table 1). Approximately half of the participants ($n = 7$) participated in the modified Delphi and/or cross-sectional survey, and eight participants attended the in-person meeting. The majority of participants (60%) were from Ontario, and there were more females than males (60% female). Geriatricians were the most represented KU group in the sample (Table 1). Three participants joined in two activities (i.e., modified Delphi and cross-sectional survey [$n = 2$] or in-person meeting and cross-sectional survey [$n = 1$]), whereas 12 participants participated in one activity only (modified Delphi [$n = 3$], cross-sectional survey [$n = 2$], and in-person meeting [$n = 7$]).

4.2. Engagement outcomes

Overall, KUs felt engaged in the activities employed within the systematic review with median scores ranging from 6.00 to 6.50 across survey domains (Table 2). Legitimacy (median 6.5, IQR 1.0) and respect (6.5, IQR 0.75) had the highest median ratings, whereas trust (6.0, IQR

0.50), fairness (6.0, IQR 0.5), and competency (6.0, IQR 1.25) had the lowest median ratings (Table 2). Overall, median stakeholder ratings ranged from 4.00 to 7.00 across meta-criteria. One stakeholder who conducted the survey online rated one question in competency and one question in fairness relatively low (“no extent” or a rating of 1) and commented that the question was unclear or uncertain to know. These questions related to what extent information was made available before the engagement activity to participate knowledgeably in the process and the extent to which all participants had an equal chance to participate.

Overall median scores for each meta-criterion were compared for KUs who participated in two or more activities compared with one activity, and no statistically significant differences were observed after conducting a Mann–Whitney–Wilcoxon rank-sum test (Table 2). The types of engagement activities employed (i.e., online compared with in-person) were compared, and trust ($U = 5$, $P = 0.005$), legitimacy ($U = 3.5$, $P = 0.003$), fairness ($U = 7$, $P = 0.013$), and competency ($U = 10$, $P = 0.035$) were rated higher in the in-person meeting than the online activities (Table 2). One stakeholder participated in an online activity and the in-person meeting. This participant was categorized as in-person; however, a sensitivity analyses was conducted with the participant ratings removed, and when comparing in-person to online activities, the results were the same.

5. Discussion

To our knowledge, this is the first systematic review to use a quantitative engagement tool to assess perceived KUs’ engagement. We found that participants rated the engagement activities relatively high, which suggested that KUs felt engaged in the systematic review process. No statistical differences were observed in engagement of KUs who participated in a single engagement activity vs. two or more activities, which suggested that multiple activities did not lead to higher levels of engagement. Degree of engagement with the in-person meeting was greater than that for online activities, which suggested that in-person activities might be more engaging.

Our study included three activities and used methods that are frequently used to elicit feedback from KUs [8]. In knowledge synthesis studies, KUs are primarily engaged as key informants and methods for engaging them in review

Table 1. Participant characteristics

Knowledge user	Number participated	Females	Males	Province		
				Ontario	Alberta	Saskatchewan
Patient	2	2	0	1	0	1
Caregiver	1	0	1	0	1	0
Geriatrician	8	5	3	6	1	1
Policymaker	4	2	2	2	2	0

Table 2. PEET median scores by meta-criterion, participation, and activity type

Meta-criterion	Overall (N = 15)	One activity (n = 12)	Multiple activities (n = 3)	P-value	Online activities (n = 7)	In-person activity (n = 8)	P-value
	Median (IQR)	Median (IQR)			Median (IQR)		
Respect	6.5 (0.75)	6.50 (1.0)	6.50 (0.25)	0.88	6 (0.50)	6.75 (0.62)	0.0927
Trust	6.0 (0.50)	6.00 (0.5)	6.0 (0.75)	0.59	6 (0.50)	6.5 (0.12)	0.0051
Legitimacy	6.5 (1.00)	6.50 (1.0)	6.0 (0.50)	0.88	6 (0.50)	7.0 (0.12)	0.0034
Fairness	6.0 (0.50)	6.0 (0.50)	6.50 (1.0)	1.00	6 (1.50)	6.5 (0.25)	0.0136
Competency	6.0 (1.25)	6.0 (1.12)	6.50 (1.75)	1.00	6 (1.50)	7.0 (1.00)	0.0354
Accountability	6.33 (0.33)	6.17 (0.33)	6.33 (1.17)	0.94	6 (1.16)	6.33 (0.08)	0.2293

Abbreviations: IQR, interquartile range; PEET, Patient Engagement Evaluation Tool. Bold values are statistically significant.

conduct include surveys, Delphi's, and nominal group techniques [8,21,22]. In addition, KUs are mainly used for only one step of the research process; specifically, of 91 studies on KU engagement in knowledge synthesis studies, only 11% ($n = 10$) used KUs in at least three steps [8]. Our study provides an empirical example of engaging stakeholders in multiple steps of the systematic review process using common approaches. Moreover, we used a validated measure to assess perceived engagement in our activities. A systematic review on measures for stakeholder engagement identified that only five of 53 studies reported on reliability, whereas none of the scales presented information on types of validity [23]. We specifically chose the PEET as it is based on theory and had evidence of validity and reliability reported as Cronbach's alpha and Pearson correlations [13].

Our study had several limitations. We had a limited number of participants and did not have equal representation of KUs. We had relatively few patients or caregivers in the study. Geriatricians were the most frequently represented KU group, but many of them were also decision-makers at their respective organizations or within their province. Difficulty in maintaining engagement and involvement throughout the review is a major challenge when working with KUs and has been mentioned in previous work [24–26]. Administering the PEET survey immediately after the engagement activity may optimize response rates. Finally, the majority of participants in the in-person meeting were team members involved in the research project, these included members on our grant who were aware of the study but had not participated in any of the activities or conduct of the systematic review. In addition, two KUs were part of the steering committee and provided input in the steps related to the conduct of the systematic review. As such, they may have been more engaged than others who were not as aware of the steps of the project.

6. Conclusions

KUs can be engaged meaningfully in systematic review processes. We found that the three engagement activities (i.e., modified Delphi, cross-sectional survey, and

in-person meeting) were successful and KUs felt engaged in the process. The type of activity contributed to differing perceptions of engagement, specifically, engagement with in-person activities, was rated higher on several domains than online activities. More research should be conducted to examine other methods to elicit KU input such as interviews, focus groups, or nominal group techniques. Moreover, these should also be tested using other opportunities within a systematic review for engagement, such as, in the development of research questions or inclusion criteria.

CRedit authorship contribution statement

Charlene Soobiah: Conceptualization, Methodology, Formal analysis, Writing - original draft. **Sharon E. Straus:** Conceptualization, Methodology, Supervision, Writing - review & editing. **Gayle Manley:** Writing - review & editing. **Sharon Marr:** Writing - review & editing. **Elliot Paus Janssen:** Writing - review & editing. **Sylvia Teare:** Writing - review & editing. **Jemila Hamid:** Writing - review & editing. **Andrea C. Tricco:** Writing - review & editing. **Ainsley Moore:** Writing - review & editing.

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Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jclinepi.2019.05.015>.

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