Barriers and facilitators to knowledge transfer and exchange in palliative care research

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Abstract

In order to ensure the effective transfer of research knowledge to those who can effect positive changes in practice, models of knowledge transfer and exchange (KTE) are required. Limited evidence exists as to how palliative care researchers use existing models to support their practice and to what extent they are perceived as effective. We set out to identify factors that influence KTE planning and implementation through semistructured interviews with experienced palliative care researchers in Ireland. Issues around KTE were drawn out through thematic analysis. Nine interviews were held with investigators on eight research projects. Ten themes were identified and categorised as either barriers or facilitators to KTE. Perceived barriers included inadequate time and funding, limited institutional capacity, competing priorities, weak communication channels and negative perceptions of palliative care. Perceived facilitators included dedicated time and resources, aligned priorities, strong professional networks, multipronged approach and KTE experience. In order to improve the quality, acceptability and reach of palliative research, it is vital that researchers improve their understanding of KTE within the context of palliative care, moving beyond academic dissemination to achieve research-informed practice by overcoming barriers to KTE through facilitated action. This study provides an overview of factors that influence KTE planning and implementation among palliative care researchers.

Background

'Knowledge transfer and exchange' (KTE) describes processes to address the gap between knowledge generated by research and its clinical use, including the production, dissemination, exchange and application of research knowledge to improve health.[1] As one of the aims of health research is the integration of new findings into routine practice, there has been a rise in interest in KTE.[2] Despite attempts to identify methods for integrating research into practice, evidence is unclear on which methods of KTE are useful in palliative care settings, within the broader context of evidence-based practice.

Models of KTE are needed to increase exposure to knowledge and to contextualise it and to increase the likelihood of practitioner awareness, internalisation and motivation to use the new knowledge.[3] Existing models provide some guidance to help map out the route to implementation of evidence-based practice, and they emphasise the need to take account of evidence and of contextual readiness and all their components.[2 4] However, it is important to consider how these models are positioned along the route, in order to directly inform KTE activities. To implement KTE strategies that are likely to be effective, researchers require knowledge and skills in a number of different areas, including theory, planning, stakeholder engagement, communicating messages and impact assessment.[5] By putting evidence-based practice onto the agenda at all levels of the organisation, healthcare providers can enhance the environment for KTE, but clinicians and managers are often unaware of specific strategies and researchers lack competency in articulating their own work.[6] KTE faces unique challenges in addressing gaps in knowledge where the environment faces very negative perceptions, such as palliative and end-of-life care where interventions tend to be associated with a deteriorating condition.[7] Complexity of advanced disease with multiple comorbidity, notably comorbid dementia, adds further difficulty to the goal of evidence-based hospice care.[8] Unless key barriers to the process are identified and addressed, it is likely that researchers and clinicians will struggle to achieve KTE. Hence, we set out:

- To explore any plans for KTE among palliative care researchers.
- To identify factors that influence KTE including barriers and facilitators to effective KTE within palliative care research.

Methods

A qualitative descriptive approach was used to address the study objectives with palliative care researchers.

Qualitative semistructured interviews were used to explore KTE practices, barriers and facilitators. A convenience sample of all principal investigators (n=15) identified by one national funder: the All-Ireland Institute for Hospice and Palliative Care was deemed sufficient to achieve the necessary data. They were approached by email and invited to a one-to-one interview (telephone or face to face) lasting 30–60 min with a female, PhD-qualified, experienced qualitative research associate with no vested interest (MJB). Participants were not known to the researcher beforehand: a professional-to-professional neutral stance was taken; participants were provided with

written information on the study prior to consenting. A topic guide, based on background evidence,[1–8] was used to explore any potential KTE plans or activity undertaken. Information was collected on the knowledge generated by each project and the context for KTE.

Guidelines developed by Braun and Clarke[9] were used for qualitative analysis with their six phases culminating in this paper: repeated reading; initial coding of meaning units; grouping codes into draft themes; reviewing the themes; defining and naming themes; and reporting. A pragmatic step-by-step approach was used to explore issues. An analytic framework was used to organise data based on the components explored: KTE plans/activities, research-based knowledge to be transferred, motivational barriers to KTE, context, target audience, cost and outcomes. Interviews were audio-recorded, and data were transcribed for analysis (using QSR International's NVivo V.10, 2012). In order to identify the important patterns of meaning expressed by participants, free of pre-existing theory yet respecting topics presented to them,[9] thematic analysis was used to explore these topics (by MJB). Patterns that emerged from the data were verified within the research team (all authors). Reporting of the study follows consolidated criteria for qualitative studies.[10]

Results

Of those approached, nine (60%) senior principal investigators (five females), working within eight funded projects, took part in a one-to-one qualitative interview: two face to face and seven via telephone. All nine held a PhD; eight held substantive academic posts, and three others who were approached were too busy. Projects were all national-level empirical studies, recruiting participants in Ireland or Northern Ireland (or both). Studies ranged from theory generating and model building to feasibility studies and guideline development. Set within palliative care, the eight projects were at differing stages: four were still recruiting participants, four had partial results and two had already begun disseminating results. New knowledge suitable for KTE had been identified from four projects, with a KTE plan already established. All eight projects planned to pursue traditional KTE methods of dissemination, such as conference presentations and peer-reviewed publication. Participants reported target groups for wider KTE to include: healthcare professionals, policy makers, individuals involved in service development, advocacy groups, voluntary organisations, service users and government. Themes that emerged from the data were categorised as barriers and facilitators to the KTE process (table 1).

Table 1 Summary of themes and subthemes emerging from discussions with palliative care researchers about their approaches to knowledge transfer and exchange (KTE)

Themes	Subthemes
Barriers	
Inadequate time and funding	Unable to predict costs of KTE; lack of available resources; overstretched existing resources; process seems difficult and time consuming; long-term change requires persistence and dedication.
Limited institutional capacity	Academic institutions more supportive of traditional KTE that fulfil grant body and academic requirements; researchers lack time and skills to expand KTE activities.
Competing priorities	Priorities in the health service; competing priorities of other components of research process, for example, recruitment issues.
Weak communication channels	Gatekeepers blocking access; lack of clear avenues for access to target audience.
Negative perceptions of palliative care	Scepticism about the value of research; variable strength of evidence; knock-on effect of recruitment issues in projects.
Facilitators	
Dedicated time and resourcing	Recognition that KTE is a process rather than an outcome; KTE takes place over time and requires dedicated time and resources.
Aligned priorities	KTE works best following research that is led by service needs.
Strong professional networks	Good networks; involve those in positions of influence for better KTE.
Multipronged approach	Multiple approaches and multiple avenues of dissemination are preferred; early and continuous dissemination is best.
Past experience	Learnt experience of what works (or does not work) informs future plans for KTE.

Barriers

Inadequate time and funding

Cost and limited resources were reported as the biggest barriers to KTE. Action, beyond traditional routes of conference presentations and publications, was deemed costly:

> Additional resources are required for effective KT in a research project outside of the actual costs of doing the research. (001)

Costing in of traditional KTE methods appeared to be achievable within research grant applications:

> I think certainly we would have had conference attendance and perhaps publication fees within the budgeting. (002)

Participants often discussed the difficulty of costing KTE into research protocols and budgets due to the difficulty in predicting KTE costs:

> A lot of it takes place at a much later stage so in that sense it's not going to be feasible to predict entirely what the cost may be and, to some extent, you do what you can, with what you have. (003)

In addition to the difficulty experienced in predicting resources required, participants spoke of the challenges of undertaking KTE. Acquiring funds for, and then actually implementing KTE plans, was seen as difficult and time-consuming, requiring dedicated time that simply were not available:

> [F]rom my experience in the type of innovation and dissemination and translation, we have done loads in putting in for bids, all of that costs money and it does take time and a dedicated resource. (004)

Due to limited funds, researchers reported that they often limit KTE activities by working within existing resources:

> We have considered the cost per se in the proposal and probably a lot of stuff that we would do we would do ourselves and you know, work it up ourselves. (007)

Limited institutional capacity

Many of the participants reported that the academic system focused on traditional KTE activities: publications and conferences. Support for further KTE beyond these was limited:

> [F]or ... the researcher... they're too busy either writing the next grant or they're too busy running the grant... I think the system supports traditional KT activities such as publication, presentations to... other academics. I think researchers let those sort of new KT approaches go, such as engaging decision-makers, simply because they don't have time...and skills. (001)

As much of the research being discussed was undertaken by PhD scholars, there were certain outcome obligations that came with that process. Academic outputs were important in accomplishing a successful PhD and an important part of a PhD scholar's training:

> [W]e are very keen that the PhD student gets a couple of publications and really we have tried to target the project to service her PhD first. (007)

This reflects a traditional academic view of KTE with a narrow focus on journal publication.

Competing priorities

The timeliness of research findings with respect to clinical need was another barrier to KTE. Participants often talked of the health service agenda and other priorities. If their research did not align with these, KTE was impossible. They highlighted the need for engagement with key stakeholders and policy makers prior to and during research and the importance of reflecting on the different messages arising throughout the research process.

> [W]here the priority is placed in terms of health service priority, it may not be the policy agenda issue so it may not be given the kind of pride of place we would...you know getting it taken seriously by organisations and particularly the health service because there's so many competing priorities. (007)

The challenges of undertaking research were considered sufficient to deter KTE. Participants discussed how researchers are so focused on data collection and analysis that there was little time left for KTE.

> I'd love to say we're at the stage of knowledge transfer but we're not. We are so focused on dealing with the issues and barriers around data collection... just trying to get the data in and get analysing it. (006)

Weak communication channels

Gatekeepers, blocking access to target audiences, were seen as a major barrier to KTE, as well as to conducting research in general. Poor or non-existent relationships with organisations with an established connection to target audiences for dissemination made KTE challenging:

> [W]e had some very closed and quite robust discussions with clinical teams... because some of the preliminary findings, they didn't like them so much, so there were a few arguments about what we were seeing and finding. (003)
>
> [T]he gatekeepers are there, and the champions in the service are there, so we hope to utilise those to filter information in... it's been effective previously so we will try to replicate. (007)

Other access issues were in relation to lack of a forum for dissemination. Often the target audience could be spread out over a wide geographical area, or researchers struggled to find a legitimate forum in which to disseminate findings. It was described as problematic:

> ...to find the legitimate forum for wider public dissemination... trying to get the wider public engagement with some of the findings ... I think there are some useful things that the public more widely could be involved in. (003)

Negative perceptions of palliative care

The very nature of palliative care research itself was seen as a barrier to KTE. One barrier arose from negative perceptions of palliative care and scepticism over the evidence base for palliative care research:

> [O]ne of the problems with palliative care is that it's complicated... it's often very difficult to get people to engage with discussions about what is appropriate, what is useful and what is the evidence saying... I think a lot of the barriers come from the fact that people like simple answers to simple questions and what we are offering here is complicated answers to often complicated questions. (003)

Also arising from scepticism, recruitment also appeared to be a problem for palliative care research. This consequently impacted on the strength of evidence emerging from the research, with implications for KTE:

> I've been interested in trying to find out what people's preferences are because somehow because of the sensitive nature of what goes on particularly in the area of end-of-life care, people tend to not be very keen on asking questions. (003)

Facilitators

Dedicated time and resourcing

It was acknowledged that KTE is more of a process than an outcome. To effect change would take time and commitment, often over a number of years. Participants acknowledged that this requires persistence and tenacity for messages to be taken up and implemented.

> [M]ore often change happens more gradually over a period of longer months and years so you know you need to have a bit of tenacity in terms of following things through and it's more helpful that in the academic context if you have a body of work that is continually building and pushing on something forward. [002]
>
> [O]utside the operations and cost of running the study itself, you would need some additional funds for linkage (and knowledge) exchange during the study... engagement with the stakeholders... identify the needs of those individuals and.... create opportunities to meet with them. (001)

These comments seem to portray some confusion between the KTE process and the need to demonstrate active implementation in practice, which clearly involves change management, deeper workforce planning and alignment with various political agendas. Our intention here is to focus on KTE.

Aligned priorities

While this issue appeared as a barrier above, it was also noted to be a facilitator. In some cases, opportunities for KTE were more easily accessible due to timeliness of the activities. If, for example, service development was occurring simultaneously with

the research, findings had more influence and were more easily communicated to practice. It was often about aligning the knowledge with practice needs:

> I mean in some ways it all works backwards because very early on we were asked by the clinical programme here on palliative care to share the knowledge as it came out of the project... (003)

This shows the value in close linkage between the various stakeholders in the process.

Strong professional networks

Good networks and access were considered key to effective KTE. Participants talked of how their senior positions allowed for easier access to target audiences:

> I'm quite networked within the palliative care community both in sort of professional and some extent the campaigning so I mean I think that's made it much easier that I know a lot of people. (003)
>
> I mean one of the great advantages of being associated with the All-Ireland Institute (for Hospice and Palliative Care) is that it has great connections throughout the whole of the Island so we would be leaning very strongly on them for (supporting research on) the island of Ireland. (009)

Multipronged approach

A multimethod or multipronged approach was thought to be associated with more successful KTE. This included multiple approaches in terms of context, namely academia, policy makers, stakeholders and clinical practice and multiple different approaches in terms of facilitation of key messages.

> [Y]ou don't expect the message to always be immediately adored and taken up as useful, you have to be very persistent and take multiple channels to try and increase the understanding of what the messages are and how they could be useful. (003)

Data from the interviews reiterated the idea that KTE is a process rather than an outcome.

> I would say probably the knowledge transfer I would like to see it starting when the PhD student is moving her stuff on, then we start using her material as the first rung of knowledge transfer...that we aren't waiting until everything is done because I think that's too late. (007)

Participants reported that KTE takes place in different stages, often beginning with a more traditional or formal approach through academic publication.

Past experience

Although some researchers reported being aware of KTE models and guidance, these were rarely used to directly inform implementation plans, which were more likely to be influenced by past experience.

> No I mean I'm familiar with the types of models mainly the Knowledge to Action cycle developed by Graham,... but to be quite frank whilst I am aware of that as a theoretical framework I would say it's largely based on sort of experience of dissemination practices from previous studies, what works and what doesn't work. (001)
>
> I know there's models of knowledge transfer... I do have this sense that ok let's not just stick with the usual conferences, there has to be another way of doing [KTE]. (006)

Few participants used models or formal guidance for developing KTE plans:

> Not really in a sort of day-to-day sense but of course I'm aware of a lot of the evidence around knowledge transfer. (003)
>
> I wouldn't be familiar with any, I know I have probably heard of them and seen some of them used but in the context of these projects no we haven't actually used any frameworks that I'm aware of. (005)

When discussing their plans, participants referred to previous examples of what had worked successfully before and reported that this would then inform future plans:

> We would use that [approach] for communications with international people, with government, with policy, yeah we would use that all the time and it has had a potent effect on them. And for that reason... it's still our strategy for the next wave. (004)
>
> I've done research with these people previously so the gatekeepers are there and the kind of champions in the service are there so we hope to utilise those to filter information in as well and we have found that it works pretty well, it's been effective previously so we will try to replicate some of that stuff. (007)

Participants recognised that their own experience of what works could be combined with more formal or strategic KTE guidance.

In summary, facilitators tend to overcome barriers. Taken together, the themes created through the process were interpreted as acting as weights in a dynamic mechanical balance, with successful KTE only likely when the force of facilitation countered the inertia presented by barriers. Some themes were in direct opposition, such as resources: a barrier when insufficient and a facilitator when plenty. Certain barriers were only indirectly paired with facilitators: negative perceptions around palliative and end-of-life care is one theme that stood alone. However, certain facilitators of KTE were also indirectly paired with barriers: taking a multipronged approach, building on experience of what works, were noted as useful facilitation forces. In each case, the KTE balance varied, more favourable when facilitators outweigh barriers.

Discussion

This study identified consistent and important barriers and facilitators to developing and implementing KTE plans among palliative care researchers. Many of the influential factors, resources, access, timeliness and opportunities, have application to a wide range of research areas. Other themes were more specific to palliative care research, such as the stigma associated with this type of research and the sensitivities of disseminating research findings to different audiences. Nevertheless, these data provide a rich overview of factors that impact on plans and current behaviours in KTE planning and implementation among palliative care researchers in Ireland.

KTE is hampered by the lack of underpinning evidence. It is not clear what works for whom and in what contexts.[11] Beyond traditional approaches, KTE is difficult due to a lack of time, resources and skills. Academic participants felt that they were bound by obligations to juniors and to their employers for 'hard' outputs: journal publications and conferences. Researchers did not feel supported or

lacked the relevant knowledge, experience or networks to carry out KTE activities beyond these traditional approaches.

Other studies confirm the need for increasing KTE skills among researchers.[12 13] A review was undertaken to try and understand the skills and knowledge required to conduct effective KTE[5] finding that efforts could be improved with increased understanding of the theory. Knowing how models work in practice ensures that resources are put to best use.[14] Although some researchers in this study reported awareness of conceptual frameworks for KTE, rarely would they use these to guide their plans. Instead, plans were based on what had worked in the past.

Our study suggests that researchers found it difficult to plan KTE activities early on in the research process. One respondent noted that getting funding for the research was often difficult enough, set aside applying for funding for KTE. Indeed, funding of such activities has been identified as an important factor.[15] This emphasis on pathways to impact among UK research funders can only serve to support this call for KTE support. Nevertheless, only four out of eight projects had a KTE plan in place beyond academic publication; in some projects, the plan was informal and opportunistic. The literature suggests that healthcare research may have a greater impact on practice when KTE strategies are incorporated early and explicitly into the research design.[5 16] This means that researchers are then likely to use collaborative approaches and identify and engage with stakeholders.[16]

Our study identified areas where researchers would have liked more support. These included help with KTE plans and confirmed the need to develop and maintain high quality relationships with decision makers.[5] Those involved in this project were well established in their field, with years of building relationships and had reputations. This is a recognised facilitator to successful KTE, demonstrated through the ease of access that participants reported they had to key organisations and stakeholder groups.[17]

With or without access to professional networks, researchers and clinicians alike struggle with KTE as part of evidence use, due to the fundamental challenge of working with complexity[18] due to 'myriad elements of context'(p. 540).[18] In the palliative care setting, researchers described additional complexities due to multimorbid cases and negative perceptions. Furthermore, end of life is heavily culture bound.[19] We recognise that KTE is a non-linear process, made possible only when all relevant stakeholders work together to address their specific concerns, like those identified in this study and others, such as consistent leadership, local autonomy, passion and engagement at all levels.[18] KTE is a necessary condition for the ultimate goal of knowledge mobilisation, and from this study, KTE is an essential foundation but insufficient to permit action; knowledge mobilisation in palliative care requires a whole system approach to introduce, manage and sustain change. Both KTE[11] and knowledge mobilisation[20 21] are complex, non-linear, multilevel and context bound. Both require sound theoretical development, and we urge close evaluation of initiatives promoting them.

Limitations

This study identified barriers and facilitators to KTE among an experienced but limited sample of palliative care researchers working in the two jurisdictions: North and South of Ireland. Themes were confirmed through the analysis process, but we do not claim to have reached saturation; other data are likely to contribute to the understanding of KTE in palliative care. While not intended to be generalisable, this small-scale qualitative study could be strengthened through verification, for example, with Principal Investigators sponsored by other national funders. Hence, responses to the findings are specifically welcomed, whether favourable or not. KTE clearly involves those professionals who are primarily 'users' of knowledge; the clinicians' experiences as recipients are also needed if KTE is to be genuine about knowledge 'exchange' between the different constituencies.

Conclusion

This study identified a number of key factors that need to be addressed in order to address the research to practice gap. With increased pressure to demonstrate impact, it is beneficial for academia to encourage researchers to look beyond traditional KTE approaches. To facilitate this, more resources in terms of funding may be required and more support in terms of training is needed to enhance knowledge of KTE theory and planning beyond publications and conferences.

Good communication and engagement with key stakeholders early on in the research process will help to overcome the barriers and will enhance opportunities to conduct research that fits in with current healthcare agendas, increasing the likelihood of successful KTE and subsequently promote evidence-based practice.

The lack of an evidence base can make it difficult for researchers to transfer research knowledge to those who could benefit from it. Institutional obligations and lack of resources hinder KTE activities beyond conference presentations and journal publications. Plans tend to be based on past experience of what worked and did not work rather than theory. KTE planning is secondary and conducted late in the research process, with researchers more focused on data collection.

Engaging with stakeholder groups early in the research cycle and establishment of a credible reputation can facilitate access to key audiences for KTE. This in turn helps researchers focus on more relevant and timely research.[6] A greater understanding of the factors that influence KTE plans among researchers could enable the development of strategies to support this process.

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References

1. **Straus SE**, Tetroe J, Graham I. Defining knowledge translation. *CMAJ* 2009;**181**:165–8.
2. **Grol R**, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003;**362**:1225–30.
3. **Graham ID**, Logan J, Harrison MB, *et al*. Lost in knowledge translation: time for a map? *J Contin Educ Health Prof* 2006;**26**:13–24.
4. **Stetler CB**, Damschroder LJ, Helfrich CD, *et al*. A *Guide* for applying a revised version of the PARIHS framework for implementation. *Implement Sci* 2011;**6**:99.
5. **Jones K**, Armstrong R, Pettman T, *et al*. Knowledge Translation for researchers: developing training to support public health researchers KTE efforts. *J Public Health* 2015;**37**:364–6.
6. **Lillehagen I**, Heggen K, Engebretsen E. Unpacking knowledge translation in participatory research: a micro-level study. *J Health Serv Res Policy* 2016;**21**:217–22.
7. **McIlfatrick S**, Noble H, McCorry NK, *et al*. Exploring public awareness and perceptions of palliative care: a qualitative study. *Palliat Med* 2014;**28**:273–80.
8. **Legler A**, Bradley EH, Carlson MD. The effect of comorbidity burden on health care utilization for patients with cancer using hospice. *J Palliat Med* 2011;**14**:751–6.
9. **Braun V**, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;**3**:77–101.
10. **Tong A**, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;**19**:349–57.
11. **Mitton C**, Adair CE, McKenzie E, *et al*. Knowledge transfer and exchange: review and synthesis of the literature. *Milbank Q* 2007;**85**:729–68.
12. **D'Amour D**, Timmons V, Sheps S, *et al*. Knowledge to action: the development of training strategies. *Healthc Policy* 2008;**3 Spec no**:68–79.
13. **Straus SE**, Brouwers M, Johnson D, *et al*. Core competencies in the science and practice of knowledge translation: description of a Canadian strategic training initiative. *Implement Sci* 2011;**6**:127.
14. **Morris ZS**, Bullock A, Atwell C. Developing engagement, linkage and exchange between health services managers and researchers: Experience from the UK. *J Health Serv Res Policy* 2013;**18**(1 Suppl):23–9.
15. **Holmes B**, Scarrow G, Schellenberg M. Translating evidence into practice: the role of health research funders. *Implement Sci* 2012;**7**:39.
16. **Kitson A**, Powell K, Hoon E, *et al*. Knowledge translation within a population health study: how do you do it? *Implement Sci* 2013;**8**:54.
17. **Elwyn G**, Taubert M, Kowalczuk J. Sticky knowledge: a possible model for investigating implementation in healthcare contexts. *Implement Sci* 2007;**2**:44.
18. **Holmes BJ**, Best A, Davies H, *et al*. Mobilising knowledge in complex health systems: a call to action. *Evidence & Policy: A Journal of Research, Debate and Practice* 2017;**13**:539–60.
19. **Crawley LM**, Marshall PA, Lo B, *et al*. Strategies for culturally effective end-of-life care. *Ann Intern Med* 2002;**136**:673–9.
20. **Davies HTO**, Powell AE, Nutley SM. Mobilising knowledge to improve UK health care: learning from other countries and other sectors – a multimethod mapping study. *Health Services and Delivery Research* 2015;**3**:1–190.
21. **Davies HTO**, Powell A, Nutley S. Mobilizing knowledge in health care. In: Ferlie E, Montgomery K, Reff Pedersen A, eds. *Oxford handbook of health care management*. Oxford: Oxford University Press, 2016:280–301.