

Localising and tailoring published research evidence helps public health decision making

Peter van der Graaf, School of Health and Social Care, Teesside University, UK,

p.van.der.graaf@tees.ac.uk

Mandy Cheetham, School of Health and Social Care, Teesside University, UK,

m.cheetham@tees.ac.uk

Karen McCabe, Public Health, Durham County Council, UK, kaz0205@hotmail.co.uk

Rosemary Rushmer, Institute of Health and Society, Newcastle University, UK,

rosemaryrushmer@gmail.com

Corresponding author: Peter van der Graaf, School of Health and Social Care, Constantine Building, Teesside University, Middlesbrough, UK, TS1 3NN, Email:

p.van.der.graaf@tees.ac.uk,

Acknowledgements

We would like to thank our case study partners and co-applicants, who gave helpful comments on previous drafts of the paper.

Competing interests

The authors declare that they have no competing interests.

Funding

National Institute of Health Research Health Service & Delivery Research (HS&DR) Grant No. 09/1002/37.

Abstract

Background: Published research evidence is typically not readily applicable to practice but needs to be actively mobilised.

Objectives: This paper explores the mechanisms used by information professionals with a specific knowledge mobilisation role to make evidence useful for local decision makers when they commission and plan public health interventions.

Methods: Data is drawn from a NIHR project that studied how, when, where and by whom published research evidence is used in commissioning and planning across two sites (one in England and one in Scotland). Data included eleven in-depth interviews with information professionals, observations at meetings and documentary analysis.

Results: Evidence is made fit for local commissioning and planning purposes by information professionals through two mechanisms. They localise evidence (relate evidence to local context and needs) and tailor it (present actionable messages).

Discussion: Knowledge mobilisation roles of information professionals are not recognised and researched. Information professionals contribute to the 'inform' and 'relational' functions of knowledge mobilisation; however, they are less involved in improving the institutional environment for sustainable knowledge sharing.

Conclusion: Information professionals are instrumental in shaping what evidence enters local decision-making processes and in what format. Identifying and supporting Knowledge mobilisation roles within health libraries should be the focus of future research and training for information professionals.

Key words: Knowledge translation, Public health, Qualitative research, Evidence-based practice (EBP), Health information needs, Health librarians

Key Messages

1. Health information professionals carry out many activities involved in mobilising research into to evidence but this is often not recognised.
2. Localising and tailoring are two key mobilising mechanisms that health information professionals can use to increase the use of evidence in practice.
3. Health information professionals make evidence fit for decision-making by localising evidence which relates to local context and needs.
4. Health information professionals tailor the format of evidence to present commissioners and planners with actionable messages.
5. Information professionals' expertise could be used more systematically to champion a culture and infrastructure within and between health organisations that encourages knowledge mobilisation.

Background

Published research evidence does not speak for itself but needs to be actively mobilised to ensure its usage by commissioners and planners of public health services. Various studies have pointed out that conveying relevant information to appropriate people does not automatically result in their taking action (Elueze, 2015).

Previous research, both in the UK and internationally, suggests that difficulties for translating published research into practice are threefold: evidence is often contested, it does not fit locally and is not put into action. Firstly, public health problems are often embedded in wider social divides and stakeholders may not agree on solutions. Secondly, published research evidence is often produced in other contexts, which raises concerns that local conditions are counter indicative (Potvin & McQueen, 2008). Thirdly, published research evidence often helps to describe what the problems and their causes are, but not how to resolve them. As a result, getting published research evidence to flow into commissioning and planning practices is challenging and often fails or takes considerable time (Cooksey, 2006). As a consequence, local stakeholders might therefore prefer to use other types of evidence, such as local intelligence and practical wisdom (Zardo, Collie, 2015; Mairs, McNeil, McLeod, Prorok, Stolee, 2013).

Public health organisations have created support roles to assist practitioners to use research evidence. A variety of titles for these roles exist in practice, such as information intermediary, knowledge translator, knowledge broker and innovation broker. We use a collective term, K* (KStar) roles as suggested by Shaxson et al. (2012); however, a defining key task of the role is to facilitate and enable the use of research evidence (and other types of information e.g. local statistics) in decision-making processes, i.e. they mobilise evidence.

Many of the activities involved in K* roles, are typically carried out by informational professionals: they search for and retrieve research knowledge to be translated into practice; and they share and spread knowledge through social networking. Shaxson et al. (2012) categorise these activities as the 'inform' and 'relational' functions of knowledge mobilisation. The third function in their model is improving the institutional environment for sustainable knowledge sharing, which is the most difficult role to perform and often outside the control of individual K* roles.

However, not many studies mention information professionals as K* roles (Elueze, 2015). For instance, a special issue (Marshall, 2014) on the role of health information professionals published in this journal in 2014 highlighted the need to develop new ways of working and acquiring new skills and competencies but did not mention K* roles and competencies. More recent studies have suggested that health libraries should think beyond simply being information providers and make better use of their skills to support translation of knowledge into practice (Davies et al., 2017). Traditionally, librarians are good at knowledge development and selection but have less understanding of the context in which knowledge is used and by who (Booth, 2011). To support K* roles in health libraries, more research is needed to investigate the role of information professionals as knowledge brokers. As so few individuals consider their role to be predominantly involved in brokering knowledge, a focus on the activities of brokering rather than on the role itself is deemed most beneficial (Elueze, 2015).

Objectives

This paper explores the mechanisms used by library and informational professionals and others with K* roles working in health to make evidence useful for local decision makers when they commission and plan public health interventions. We use the term 'knowledge managers' through the rest of this article to describe this population, referring to information professionals with a specific K* role. Data is drawn from a National Institute for Health Research study (reference withheld) that explored, in collaboration with research participants, how, when, where and by whom research evidence (and other information) was used under different organisational arrangements. The study followed a public health commissioning process in England (across purchaser-provider split) and a joint planning process in Scotland (unified organisational arrangements), as each developed an alcohol-related, public health intervention. The paper focuses on mechanisms that help to contextualise research evidence for local decision-making processes and make the evidence more relevant/ applicable by packaging research evidence in ways that provide actionable messages.

Methods

Study design

A qualitative methodology was selected to focus on the social and situated process of evidence use and the meanings and significance this holds for participants. The data collection 'followed-the-action' in two local decision-making processes (one on commissioning a public health intervention to reduce maternal alcohol consumption and one on joint-planning of alcohol licensing) by observing meetings of commissioners and planners, analysing the documents used and produced in these meetings, and by interviewing participants between meetings. The English and the Scottish sites were identified by their similar population profiles (large, post-industrial urban conurbations). Previous nationally funded public health research had been undertaken across these locations, and we sought to add to this evidence base. A high priority public health issue was selected because the research team felt this was likely to have continuing relevance, irrespective of the changes in public health commissioning arrangements in England following the Health and Social Care Act (2012).

Sampling

Using interviews (c.45), observations (c.12), and documentary analysis we examined what kinds of evidence were mobilised between the people, groups and organisations involved. Members of the research team observed meetings of the planning group in each case study site (a local multidisciplinary public health partnership in the English site and a licencing forum in the Scottish site) between October 2012 and August 2013, taking notes on context, content of discussions and the interactions between members. Documents used in these meetings (e.g. minutes, supporting documents, such as Joint Strategic Needs Assessments and evidence summaries, and emerging strategies for the alcohol-related, public health interventions), were analysed for clues about how, when, where and by whom research evidence (and other information) was used by the health practitioners to inform their decision-making.

Interviewees were recruited via snowball sampling: those directly involved in the commissioning or joint-planning process under study were asked to identify people that helped them to gather, collate and access evidence. This identified 20 people as K* practitioners (respectively 13 in the English case study and 7 in the Scottish case study). We selected a sample of 12 people from this list to represent a range of organisations and sectors). Each candidate was approached by email to participate in the research and 11 consented to take part in in-depth face-to-face interviews between April and July 2013.

The 11 respondents included 5 males and 6 females, and representatives from Universities (2), NHS Trusts (3), City Councils (3) and other organisations and local partnerships (3), enabling a triangulation of different viewpoints in the analysis. Participants held various job titles, ranging from information roles such as Head of Library Services, Information Manager, Public Health Intelligence Manager, and Research Programme Manager to topic specialist roles, such as Public Health Consultants, Substance Misuse Specialists, Strategic Policy Officer and Senior Marketing Executive. The numbers are small but where possible we contrast the different views given across the types of organisation.

The interviews explored the postholders' perceptions of their role within the organisation, what they considered worked well, the challenges they faced, their views on how they were supported by their employing organisation how organisational change affected their roles. They were asked for examples of what evidence they gathered and what they did with it (e.g. collation and passing it on). The term 'evidence' was not defined for participants, to allow them to use their common-sense understanding of the term. What they referred to as 'evidence' was noted (e.g. research evidence, data and statistics and other intelligence). Written consent was obtained from each respondent before the interview took place.

Data analysis

Interviews were recorded and transcribed verbatim and coded in NVivo using thematic framework analysis (Srivastava & Thomson, 2009). Initial coding was performed by the interviewer and each code was validated independently by three other research team members. Inductive coding was used led by the question how, when, where and by whom published research evidence was used by the health practitioners to inform their decision-

making. Where coding discrepancies occurred, these were discussed in team meetings to agree on adjustments and refinements of the coding framework. Our analysis of the interview data reached saturation when no further developing themes were identified.

Findings

The following themes were identified in our analysis and we discuss each of them below, drawing comparisons between the two case study sites:

- Perceptions of local evidence needs and use
- Localising evidence
- Tailoring evidence
- Personal relationships

Theme 1. Perceptions of local evidence needs and use

The English case, which we have called Rosetown, had a history of evidence-based commissioning and a national reputation for high profile research around alcohol. National data on alcohol-related harm was therefore easy accessible and in some cases originated from the case study site. However, even under these pioneering conditions, several knowledge managers we spoke to acknowledged the limits of national data and its poor fit locally:

They [national data] can be either out of date or don't quite include the information [needed], which isn't useful on the ground... (local authority2).

The need for more localised evidence was expressed as a consequence of what knowledge managers described as Rosetown's 'unique regional position', e.g. i.e. significantly higher alcohol related admission and mortality rates than similar areas. It was believed that this perceived uniqueness required different solutions, implying that interventions developed elsewhere could not be easily transferred to Rosetown.

Because we're just different from..., we are the same... but we have a lot more issues I think than some places. Like, you know, somewhere else is maybe doing a piece of work

on this, it would probably, might look quite different to what it's saying in [Rosetown]. Yes, so it wouldn't work looking at somebody in another area, it's not the same problem. And the kind of like prevalence about alcohol and stuff, isn't the same here, it's a real unique issue (local authority3).

Different stakeholders in the decision-making process held different opinions about the usefulness of local data and how it should be used. Knowledge managers emphasised the need for different kinds of evidence, such as local intelligence and practical wisdom (i.e. different from the peer reviewed and published, academic 'evidence-base' produced in high-profile research programmes) to inform the local commissioning process of public health interventions and to help answers different questions:

...one of the things that is increasingly apparent around evidence-[based] commissioning, is that evidence for commissioning is less likely to appear in your sort of peer review materials. Which... will probably tell you what you need to know if you're interested in a particular treatment... but aren't very good when it comes to detailing how you might design a service. What sort of outcomes you should reasonably expect, how you're going to measure the performance of a service, what you might include in the service spec, and that sort of material (NHS4).

... what you almost want to know is, what's the organisation that is comparable with you elsewhere in the country up to? What have they found out? And commissioners are very, very keen on that idea, they don't want to be outliers, they don't want to do anything particularly unusual that's [not] been done elsewhere. And I think part of that's because... they're always acutely aware that there may be some legal comeback if they get it wrong (NHS4).

This suggests a combination of 'evidence' is actively sought and weighed up, including the commissioning intentions of colleagues in other areas and the risks of legal sanctions.

The lack of fit between available published research evidence and local decision-making processes was also present in Thistle town, our Scottish case study; however, it manifests itself slightly differently. Here the alcohol topic under scrutiny for its use of evidence was the alcohol licensing process. Public health involvement in alcohol licensing is supported by legislation in Scotland. The public health licensing objective was introduced in The Licensing (Scotland) Act 2005 (Scottish Government, 2005). This objective was designed to enable public health evidence to enter the consultation process and be considered in licensing decision-making alongside other information. The Act stipulates that every local authority must have a Licensing Board and a Local Licensing Forum. The role of the Board is to regulate premises that sell alcohol to the public and grant, extend, or revoke individual licenses to sell alcohol. Licensing Boards are a separate legal entity to councils and have their own constitution and statutory procedures which differ from those applicable to councils and council committees in Scotland.

Several knowledge managers in Thistle town commented on the legal framing of the decision-making process of the Licensing Board, which directs and restricts the flow and format of evidence.

... the licensing board is a very statutory type role, they are only concerned with licensing issues in terms of the License in Scotland Act... at the end of the day, they are there to apply the licensing act in terms of the business and that's what they do (Crime and Safety Partnership6).

In addition, the Licencing Forum in Thistle town, which advised the Board in their local decision making had a strong representation of local businesses. Knowledge managers believed that Board and Forum members put a higher value on economic arguments than health messages. Public health messages (and research evidence) to restrict the provision of alcohol by reducing alcohol outlet density, were considered to run counter to the buoyancy of the local night time economy. Public health evidence was described as 'the kill joy of the night time economy'. Misuse of alcohol was seen as an individual problem that should not be allowed to ruin a night out for the majority of sensible drinkers or the livelihood of the local business community.

That's a challenge because they're out there to make money [local businesses]. If you speak to the Chamber of Commerce, they're very vocal, on an opposition to things like overprovision. You'll get a public health argument saying, lots of concentrated off-sales are bad, we need to do something about it, we need to regulate it. You've got the Chamber at the other end saying, it's a free market, if the demands are out there, have the supplies out there, make sure you've got the supplies. So that's always the balance you have. (Crime and Safety Partnership6).

This appears to be a 'zero-sum' situation, where if one side 'wins' the other loses.

Theme 2: Making evidence fit: localising

In Rosetown, a particular approach was used to localise national evidence and focus commissioning interventions on local need. Since the early 2000's the public health team had used social marketing techniques (Walter & Davies, 2003) based on nationally validated segmentation data to identify and target local groups of interest. Local primary data collection gathered the views of these targeted groups (through interviews and focus groups) and this data was used to develop, pilot and deliver clearly defined and acceptable end-products (interventions) to bring about service improvements, training or social marketing campaigns for the identified target groups. The local authority public health team allocated an annual budget to commission social marketing research on topics suggested by area leads. In this way, unpublished local market research was carried out to address the perceived shortcomings of national data and the published research evidence-base and to localise data to inform commissioning decisions. In other words, available national evidence was 'localised' by relating the evidence directly to the local context in order to increase its relevance and usability for decision making.

This did not mean that the social marketing research was without its critics. Some stakeholders expressed concerns over the dominance of this approach at the cost of previously valued sources of information. Questions were raised by local academic researchers about evaluating the end products delivered through the market research and

how their effectiveness was assessed in terms of changing local unhealthy behaviours. Consequently, some knowledge managers highlighted a need for more robust service evaluations that researched longer term effects and outcomes of locally determined actions. In Thistle town, different localising approaches were developed in response to the legal requirements of the Licensing Act within which the Licensing Board and Forum need to act. One method consisted of highlighting the national and international evidence base on the link between outlet density and alcohol related harm (Popova, Giesbrecht, Bekmuradov, Patra, 2009) and translating this evidence for Thistle town by modelling the effects of current density data for the area to arrive at a projection of alcohol related hospital admissions in the near and distant future (i.e. theoretically linked harms related to alcohol provision by area).

However, this evidence was dismissed by most Board and Forum members as being too complicated to understand (graphs and statistics) and not specific enough to provide input for individual licensing decisions. So, although in Scotland, public health is a legal consultee, the research evidence (population data) cannot relate research evidence to local premises level and its contribution to harm, which is what is required by the Board members. Unfortunately, the public health department lacked the resources to respond to individual license applications, highlighting local capacity issues.

Therefore, a different approach, which complemented the legal framework of the Licensing Board, was developed by the local crime and safety partnership. Instead of framing the issues in terms of long-term health risks due to alcohol consumption, the problem was re-framed as social nuisance, public safety and other unanticipated anti-social behaviour problems within the night time economy. This focused on safeguarding issues around licensing, such as unaccompanied females, long queues around taxi stands, fights and people congregating around fast food outlets after pub closures. Instead of public health research data on alcohol-related hospital admissions, the partnership collected local data and analysed crime statistics and CCTV monitoring data to identify hotspots of alcohol-related crime in the night time economy. Data was presented visually on detailed maps that illustrated areas for potential interventions and was perceived to be more helpful in the decision making process around licences and overprovision.

Theme 3: tailoring evidence to provide actionable messages

The findings point to another important mechanism for making evidence fit for local decision-making. The partnership in Thistletown tailored evidence from particular local sources by formatting this evidence in a way that was immediately understood by the Forum members and, perhaps more importantly, presented solutions that could be readily implemented through the partnerships they developed. The importance of tailoring, or 'bringing the data to life' as one interviewee called it, was stressed by other knowledge managers.

Big and more [data] doesn't always mean better. But this is where analysts and researchers themselves are at fault, it's up to us to bring it to life. There's a famous quote that says policy makers will continue to make decisions based on anecdotal evidence, if we can't as analysts, can't bring that to life. We've got to bring the data to life, not make it complex, not get caught in all the statistical..., just make it simple. What works and feed that back into the operational and strategic environments, so resources just can be targeted better (Crime and Safety Partnership10).

This approach proved fruitful as it was conducive to the economic framing of the Licensing Forum (localising), while developing targeted interventions that helped alleviate some of the negative issues associated with overprovision (tailoring). In other words, tailoring is another mechanism that knowledge managers can use to make available evidence more relevant and useful for decision making by formatting the evidence in way that provides actionable messages. While localising refers to directly relating evidence to local context, tailoring is more concerned with following the evidence up with suggested actions.

The need to actively tailor the information gathered for decision was also recognised by knowledge managers in Rosetown. Findings from the market research were presented using visually appealing PowerPoint slides that were personally communicated to the public health commissioners.

It was felt that tailoring of evidence had become more important since public health teams moved from NHS governance to local authority control. Participants believed that local

councillors had different views on what counts as evidence and preferred a different format to NHS decision makers. Knowledge managers described a need to keep evidence reviews ‘short and snappy’ and to provide interpretations of the data for local councillors:

If you’re a councillor... you don’t have time to read a twenty/thirty-page report. You want the headline, what are the key points that I need to know about this topic? So things like a fact sheet essentially... trying to get them to be more nimble and business focused really. We need something that’s kind of responsive and short and snappy (local authority2).

One of the things I’m kind of conscious of, particularly for the Council environment, is that we don’t just go, ‘here you go, here’s some data’. It has to come with that kind of interpretation and kind of explanation. There’s a danger that they can just run away and discount things. They have done that in the past and they’ve come up with some really bizarre conclusions (local authority2).

The different approaches taken in each case study site to localising and tailoring evidence are summarised in Table 1 below.

Table 1. Knowledge mobilisation activities used by information professionals in Rosetown and Thistle town

Activities	Localising	Tailoring
Rosetown	Use different types of information, such as commissioning intentions of colleagues in other areas and the risks of legal sanctions	Write short summary document of available data, which include interpretations of the data
	Combine local statistics with qualitative interview and focus group data	Present research findings visually on PowerPoint slides (pictures and key messages)
	Apply social marketing techniques to develop, pilot and deliver clearly defined and acceptable interventions	Communicate findings in person to public health commissioners

Thistle town	Model national and international data to estimate projections of alcohol related hospital admissions in the local area	Summarise model estimates in detailed report with recommendations for areas of overprovision
	Reframe alcohol related harm as a social nuisance, and public safety using local crime statistics	Present data visually on detailed maps (plotting) that illustrated areas for potential interventions
		Communicate findings in person to Licensing Forum members

Theme 4: Personal relations (preferred providers)

Being able to make evidence fit for decision making by relating it to local context and needs (localising) and by presenting it in the right format with actionable messages (tailoring) was a valued skill among knowledge managers in both case study sites. Decision-makers developed strong preferences for who they approached to help them with evidence requests. Useful evidence was repeatedly pulled-in from trusted sources with whom existing relationships were established. A personal, face-to-face approach was favoured:

That was really based on trust. I would say a lot of it's probably individually driven, (which I've always said is a flaw), in that these kind of people are very much driven by whether or not you can or can't deliver what they need you to deliver or not. And they've made decisions as to whether or not people can, and based on previous work that I've done, they've been like, yes we'll ask him, he'll do it, that's what we're all about, we'll go to him (NHS8).

In Rosetown, the tailoring of evidence became entrusted with particular individuals in and out of the public health team who had proved themselves capable of addressing the local needs of decision-makers in commissioning processes. In Thistle town, The Crime and Safety Partnership was the main provider of evidence to Licensing Forum and Board and the only external organisation with a standing agenda item on every Forum meeting.

Discussion

The findings above suggest that many things are going on when commissioning and planning decisions take place. Commissioning is not a simple enactment of the evidence base. There is an active consideration of risk, the desire to be in line with other commissioning areas, and careful stewardship of public money. Taken together, our research highlights the importance of making whatever evidence is used fit for local circumstances taking account of the complexity of commissioning decision-making and the need for local accountability.

Experiences from knowledge managers in both case study sites highlight that tailoring and localising are activities that were seen to increase the relevance and usability of research evidence by providing actionable messages (tailoring) that relate directly to the local context (localising). This was achieved in selective interpersonal networks that not only preselected particular kinds of evidence. In Rosetown, qualitative data from interviews and focus groups supplied by a preferred provider (a market research organisation), was combined with local statistics and privileged to inform decision-making.

In Thistle town, a specific approach to localising data and the planning of public health interventions was developed by a preferred provider (Crime and Safety Partnership) that specialised in a particular type of data (crime data) and applied a particular type of evidence collation and accessible presentation methods (visual plotting).

In the Scottish case study site, tailoring also involved selecting the right topic for the data. Instead of using data on alcohol-related harms (and poor health outcomes) which were the preferred indicators for public health, the community partnerships opted for data on public safety and nuisance as it was more easily understood by the Licencing Board and Forum members and provided a basis for action. Data was presented visually on detailed maps that illustrated areas for potential interventions, providing an actionable knowledge product.

What our findings suggest is that getting research evidence into practice requires more than just accessing and collating relevant evidence research: adapting evidence to local context, based on an in-depth understanding of local decision-making processes, and positive working relationships are essential to be able to localise and tailor research evidence for local decision-making processes.

Developing this understanding and building these relationships enables knowledge managers to help policy makers access evidence quickly and provide them with evidence that is acceptable (less contested) and useful (by providing actionable messages). Therefore, localising and tailoring of evidence, addresses some of the main challenges in the literature for mobilising research evidence into practice in UK public health settings, such as bridging social divides over what counts as evidence (Potvin & McQueen, 2008), speeding up access (Zardo & Collie, 2015) and improving usefulness of research evidence (Elueze, 2015; Mairs, McNeil, McLeod, Prorok, Stolee, 2013), as outlined at the beginning of this paper.

The need for localising and tailoring evidence to make evidence useful and usable for local decision makers also highlight that 'what evidence is seen to fit' is not only about the nature of the evidence, but its mobilisation. Useful evidence and valid knowledge is intrinsically tied to where it is used and by whom. How evidence is introduced, by whom, and the trust, credibility, relationship skills and likeability of the messenger impact on the likely uptake of that evidence into the decision-making process. These findings are in line with findings from other studies that highlight the social construction of knowledge and the importance of social networks for mobilising knowledge (Ferlie, Fitzgerald, Wood, 2000; Innvær, Vist, Trommald, Oxman, 2002). Researchers cannot assume that the evidence 'speaks for itself', nor that decision-makers will accept their views that the evidence is generalisable and will work anywhere.

What our research adds to the existing knowledge base is a more detailed understanding of the particular mechanisms employed by knowledge managers. The two mechanisms identified in this paper that are used by knowledge managers expand on two functions described by Shaxson et al. (2012)⁶ in their model for K* functions: the 'inform' and 'relational' functions of knowledge mobilisation. Localising evidence helps to inform what knowledge is relevant in a particular context, while tailoring uses local relationships to design and deliver actionable messages. However, K* practitioners in our two case study sites were less involved in the third function in Shaxson et al.'s model: improving the institutional environment for sustainable knowledge sharing.

This was recognised by the knowledge managers themselves, acknowledging that the institutional environment they were working in could be a barrier to knowledge sharing. For

instance, in Thistle town, the Licensing Forum was dominated by local business representatives, who put a higher value on economic arguments than health messages. Therefore, strong evidence from health research on the positive impact of reducing alcohol outlet density was ignored, despite best efforts to share and present this data. To improve information sharing in this context an organisational culture change is required that values both types of evidence. A more embedded role of health information professionals would enable them to facilitate conversations about different types of evidence and how to blend them effectively for decision making. The knowledge into action model for NHS Scotland demonstrates the potential of this approach. The model provided a collaborative working framework for librarians and health care staff and encouraged new ways of working as library and information professionals embedded themselves in clinical and improvement teams to facilitate the transfer of knowledge⁸. This is in line with wider developments to facilitate evidence use in public health through embedded approaches (reference withheld).

Strengths and weaknesses of the study

The in-depth case study design and sampling of knowledge managers across different types of organisations permitted deep examination of practice in situ and the interplay between multiple factors in that context as they occurred to provide a realism and richness that controlled designs often do not have. In following this design, we acknowledge that our sample is relatively small. However, our analysis of the interview data reached saturation when developing themes and, by co-producing and replicating the findings across two case studies, we have more confidence in the generalisability and robustness of our findings (Noor, 2008). Our findings are localised within an English and Scottish context and therefore might apply differently in other countries which have developed different health systems, for instance, where public health is not based within local authorities.

Conclusions

Health information professionals carry out many of the activities involved in mobilising research into to evidence. Activities to ensure research evidence is used in practice are

necessary because the research evidence-base is often complicated, and difficult to interpret rendering its use in commissioning decisions unlikely. A limited number of tried-and-tested people, which Shaxson et al. (2012) identified as K* roles, are entrusted to take whatever evidence is available and make it fit for local use. We have argued that this requires localising of the evidence to the local context and tailoring of the message to the task to provide actionable messages in a form that end users can act upon. It is these steps that renders evidence both useful and usable in decision-making.

We argue that the K*role of health information professionals in local commissioning and planning processes for public health interventions has not been fully recognised and is under-researched. K* roles helps to inform what knowledge is relevant in a particular context (localising), while using local relationships to design and deliver actionable messages (tailoring). Understanding, identifying and supporting K*roles with health libraries could be the focus of future research and training for health information professionals. Their expertise and knowledge could be used more systematically to champion a culture and infrastructure within health libraries and with health organisations that encourages knowledge sharing and mobilisation.

References

- Booth, A. (2011). Bridging the 'Know-Do Gap': a role for health information professionals? *Health Information & Libraries Journal*, 28(4), 331-334. DOI: 10.1111/j.1471-1842.2011.00960.x
- Cooksey, D. (2006). A review of UK health research funding. The Stationery Office.
- Davies, S., Herbert, P., Wales, A., Ritchie, K., Wilson, S., Dobie, L., & Thain, A. (2017). Knowledge into action—supporting the implementation of evidence into practice in Scotland. *Health Information & Libraries Journal*, 34(1), 74-85. DOI: 10.1111/hir.12159
- Elueze, I. N. (2015). Evaluating the effectiveness of knowledge brokering in health research: a systematised review with some bibliometric information. *Health Information & Libraries Journal*, 32(3), 168-181. DOI: 10.1111/hir.12097
- Ferlie, E., Fitzgerald, L., & Wood, M. (2000). Getting evidence into clinical practice: an organisational behaviour perspective. *Journal of Health Services Research & Policy*, 5(2), 96-102. <https://doi.org/10.1177/135581960000500207>
- Innvær, S., Vist, G., Trommald, M., & Oxman, A. (2002). Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal of health services research & policy*, 7(4), 239-244. <https://doi.org/10.1258/135581902320432778>
- Mairs, K., McNeil, H., McLeod, J., Prorok, J. C., & Stolee, P. (2013). Online strategies to facilitate health-related knowledge transfer: a systematic search and review. *Health Information & Libraries Journal*, 30(4), 261-277. DOI: 10.1111/hir.12048
- Marshall, A. (2014). The role of the health information professional. *Health Information & Libraries Journal*. DOI: 10.1111/hir.12077
- Noor, K. B. M. (2008). Case study: A strategic research methodology. *American journal of applied sciences*, 5(11), 1602-1604. DOI: 10.3844/ajassp.2008.1602.1604
- Popova, S., Giesbrecht, N., Bekmuradov, D., & Patra, J. (2009). Hours and days of sale and density of alcohol outlets: impacts on alcohol consumption and damage: a systematic review. *Alcohol & Alcoholism*, 44(5), 500-516. <https://doi.org/10.1093/alcalc/agg054>

Potvin, L., & McQueen, D. V. (2008). Practical dilemmas for health promotion evaluation. In Health promotion evaluation practices in the Americas (pp. 25-45). Springer New York.

https://doi.org/10.1007/978-0-387-79733-5_3

Scottish Government (2005). *The Licensing Act (Scotland)*. London: The Stationery Office.

Shaxson, L., Bielak, A., Ahmed, I., Brien, D., Conant, B., Fisher, C., Gwyn, E., Klerkx, L.W. (2012) Expanding our understanding of K* (Kt, KE, Ktt, KMb, KB, KM, etc.): a concept paper emerging from the K* conference held in Hamilton, Ontario, Canada, April 2012. United Nations University.

Srivastava, A., & Thomson, S. B. (2009). Framework analysis: a qualitative methodology for applied policy research.

Walter, I., Davies, H. (2003). Increasing research impact through partnerships: evidence from outside health care. *J Health Serv Res Policy*, 8 (2): 58-61.

<https://doi.org/10.1258/135581903322405180>

Zardo, P., & Collie, A. (2015). Type, frequency and purpose of information used to inform public health policy and program decision-making. *BMC public health*, 15(1), 381.

<https://doi.org/10.1186/s12889-015-1581-0>

Declarations

Ethical approval and consent to participate

Our study complies with the appropriate national research ethics process and R&D and governance processes of the NHS. The study was externally reviewed by the National Institute for Health Research Health Services & Delivery Research programme (NIHR:HS&DR) and by Teesside University research ethics committee (Ref. no. 291/11).

Consent to publish

Individual written consent to publish was obtained from each respondent in our study.

Availability of data and materials

The datasets supporting the conclusions of this article are available upon request from the authors and will be made available in the Teesside University's Research Repository (TeesRep), <http://tees.openrepository.com/tees/>

Authors' contributions

Conception of the idea for the study came from Rosemary Rushmer, who developed the study design and sought funding from the NIHR. Data collection and data analysis was conducted by Peter van der Graaf. Data interpretation was supported by all authors. The paper was drafted by Peter van der Graaf and commented on by all authors. The final version was agreed by all authors.