When can research from one setting be useful in another? Understanding Perceptions of the Applicability and Transferability of Research

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Abstract

Background

Determining whether research findings from one setting are relevant to another is complex and poorly understood. This study aimed to explore the factors affecting whether research from other settings was perceived to be of potential use to those working in or researching maternal health in Ghana.

Methods

Semi-structured interviews were conducted with 69 purposively-sampled government decision-makers, researchers and other stakeholders working in maternal health in Ghana in 2008-9.

Results

The most influential factors affecting perceptions of applicability/ transferability were the study's congruence with previous experiences and with interviewees' beliefs. Interventions' adaptability was also considered crucial (and more important than remaining faithful to the original intervention). However it was frequently considered a distinct stage in the research use process rather than a consideration of applicability/transferability.

More attention was paid to the implementability of the intervention in the new setting, than to whether it would be as effective there. Interpretations of intervention descriptions and evaluation findings varied between interviewees, even when the same information was presented.

Conclusion

This study is one of the first to explore perceptions of applicability/ transferability of public health research among researchers and potential

research users in a low-income setting. The findings suggest that existing frameworks of applicability/transferability do not reflect the factors considered to be most important in Ghana.

Introduction

Given limited resources, it is not possible to conduct studies on all issues in all settings before making a policy or programme decision. Therefore if research is to inform such decisions, it is necessary to consider studies conducted in other settings. Decision-makers must assess whether research conducted elsewhere is appropriate for use in their own setting. Two central assessments to consider may be whether an intervention evaluation is applicable (i.e. whether an intervention could be implemented in the new setting) and whether it is transferable (i.e. whether it would be as effective in the new setting as it was in the original study setting) (Wang et al., 2006).

The complexities of decision-making and research use are now well accepted and it is now recognised that research is only one of a number of potential inputs that may influence a decision (Weiss and Bucuvalas, 1980, Nutley and Webb, 2000, Davies and Nutley, 2002). Nevertheless, those involved in research remain hopeful that it will inform decisions in some way. Although there are a wide range of complex factors that may affect whether or not research is 'used' by decision-makers, it seems logical to assume that if research is not considered of 'relevance' to the decision-makers' setting, it is less likely that they will use it in any sense. Poor assessments of the applicability and transferability of research findings may prevent effective interventions from being introduced in settings where they would be beneficial,

or lead to interventions being inappropriately introduced to settings where the balance of benefits, harms and costs seen in the original setting would not be replicated.

Numerous frameworks have been proposed for the assessment of applicability and transferability in public health and have been synthesised in a systematic review (Burchett et al., 2011). However these frameworks did not appear to have been developed based on the views of the potential framework users, nor tested with this audience. Although they provide a useful starting point, they tend to be theoretical and lack 'field-testing' and so their utility in 'real-life' decision-making situations in unclear.

The potential benefit of an improved understanding of the applicability and transferability of research findings is particularly great for low-income countries, which have fewer resources to conduct their own research and are therefore more likely to have to look elsewhere, if they are to use research in their decision-making.

The current study set out to explore which factors were felt to be important when deciding whether public health research could be of use to those in other settings and present these in a conceptual framework. The findings reported here were part of a larger study that explored perceptions of the usefulness of public health research in Ghana (Burchett, 2010). The issue was explored through the topic of maternal health, in the context of Ghana. Maternal health

was selected as it is a classic example of a complex area of public health, where little progress has been made in many countries and the research base is broad and disparate. Ghana was selected as a low income country with a relatively stable government and health system, but with little activity from the international community to encourage research use at the time of the study.

Methods

This qualitative study involved semi-structured interviews with decision-makers and researchers working in maternal health in Ghana in 2008-9.

Purposive sampling was used to identify interviewees from policy documents, organisations known to be active in maternal health in Ghana and others suggested by colleagues and interviewees.

Interview techniques

Three techniques were used in the interviews to facilitate a detailed exploration of perceptions of the applicability and transferability of research:

Brainstorm

Rating question

Study ranking exercise.

These techniques were used in this order, moving from the more abstract to

those with prompts and concrete examples.

The Brainstorm

In the brainstorm, interviewees were asked what they would like to know if they had to decide whether a study from another setting were of use to them.

The Rating Question

Interviewees were shown a list of possible dimensions which may be considered when assessing a study's applicability and transferability. These included: population, setting, ease of intervention implementation, adaptability, acceptability, need/prevalence of health problem, effectiveness and setting-specific influences (appendix 1). They were asked to rate these dimensions in order of importance and discuss their reasoning.

Study Ranking Exercise

To contrast with the more abstract techniques described above, the study ranking exercise attempted to encourage interviewees to think about more concrete applicability/transferability assessments. Interviewees were shown four short summaries of intervention evaluations aiming to tackle delays in accessing healthcare for obstetric emergencies (see table 1 and appendix 2). This topic was chosen because it represents a typically complex evidence base

for complex public health interventions which are often context-sensitive.

Although a current international policy focus, there remain few rigorous

evaluations of interventions tackling access to emergency obstetric care. The

studies were selected to reflect a range of interventions, study designs and

geographical areas, using different outcome measures and presenting varying

findings, as this is often the reality when comparing public health intervention

evaluations.

Table 1: Intervention Evaluations in Study Ranking Exercise

Country	Intervention evaluation	Reference
Tanzania	A community empowerment approach to develop plans for emergency transportation to health facilities	(Ahluwalia, Schmid et al. 2003)
Niger	a solar-powered radio link between health facilities and the district hospital and a Land Cruiser ambulance	(Bossyns, Abache et al. 2005)
India	Home-based lifesaving skills for women and their primary caregivers	(Fullerton, Killian et al. 2005)
Nigeria	A community emergency loan and transport scheme	(Essien, Ifenne et al. 1997)

Interviewees were asked to rank the applicability and transferability of these

studies to their own setting. They were asked to explain their reasoning and

what other information they would have liked.

Pilot Interviews

The first four interviews were intended to be pilots, in that the schedule and tools were amended after each. However as the data collected was considered to be of use, three of these were included in the analysis (the fourth was excluded as they did not work in Ghana and so were not eligible). In these pilot interviews, questions based on those used in an existing framework were asked (Wang et al., 2006). However it became clear that these questions were too lengthy and did not encourage the interviewees to discuss the issues in depth. Subsequently, the rating question was introduced in order to facilitate discussion. Initially the rating question was based on an existing framework (Wang et al., 2006). Following preliminary analysis, this was amended to make it clearer and more pertinent to the interviewees. The summaries for the study ranking exercise were also shortened after the preliminary analysis, following complaints that there was too much reading involved in the interviews.

Analysis

The interviews were recorded or, if permission to record was declined, notes were taken and typed up immediately afterwards. Audio-recorded interviews were transcribed verbatim. The data were analysed using Framework Analysis and managed using the software 'Atlas.ti' (Ritchie and

Spencer, 1994). Codes were developed from an initial analysis of a subset of interview transcripts and then applied to all transcripts. Summary spreadsheets were created, with one column for each code and one row for each interviewee's responses. The data for each code was then explored, whilst continually referring back to the original transcripts to minimise the risk of misinterpretation arising from the summaries. The data for each interview technique was initially analysed separately, before exploring the data for all three combined. However richer data was collected from the study ranking exercise compared to the brainstorm and rating question, such that the analysis placed greater weight on the data collected from this technique.

Ethical approval was granted by the London School of Hygiene & Tropical Medicine and the Health Research Unit of the Ghana Health Service (GHS).

Findings

Description of sample

In total, interviews were conducted with 69 individuals: 25 government staff (at both national and sub-national levels), 18 maternal health stakeholders (e.g. bilateral donor or non-governmental organisation staff), 24 researchers (in Ghana and the UK) and two others who had conducted research and also held, or had held, government positions. Most interviewees were Ghanaian, although interviewees also came from Europe (n=6), North America (n=2) and other

African countries (n=2).

Twelve interviewees were not asked to complete the study ranking exercise due to time constraints or because they had professed a lack of knowledge or interest in maternal health at an earlier stage of the interview.

Perceptions of applicability/transferability

Interviewees focused mainly on issues relating to applicability (i.e. the ability to implement the intervention), to the relative neglect of transferability (i.e. would it be as effective here). Although most grasped the concept of applicability, the issue of transferability was found to be particularly difficult to understand. Interviewees frequently talked in more general terms about what would work or be 'successful'. Apart from when forced to consider them separately in the rating question, applicability and transferability were not generally viewed as two distinct concepts to be discussed separately. For this reason, the remaining analysis uses the conjoined phrase, 'applicability/ transferability'.

Responses to different interview techniques

Brainstorm

Overwhelmingly, the most frequently mentioned issues in the brainstorm related to the comparability of, or similarities between, the original study setting and the

new setting. The ease of implementing an intervention was also mentioned often. Issues to do with the study design or methods, the effectiveness (or potential effectiveness) of the intervention or its adaption were raised less often. The congruence of the study's findings with beliefs, experiences or other evidence was rarely mentioned at all.

Rating Question

As mentioned above, the rating question was initially based on an existing framework (Wang et al., 2006). It became clear during the initial interviews that some dimensions, such as 'social acceptability' and 'cultural adaptability', were misunderstood as referring to the general social or cultural context, rather than the intervention's acceptability or adaptability. The concept of transferability was also poorly understood and frequently neglected. Whilst some elements were almost universally considered to be unimportant, notably the education level of the target audience, other factors valued by decision-makers had not been included (e.g. congruence with previous experience). Many interviewees felt that all the dimensions listed were important, or that they were unable to rate their importance since this would depend on the particular issue being considered.

Population and setting factors were most commonly rated as important, followed by acceptability. Adaptability was often considered less important, either

because of a perception that it was relatively easy to adapt interventions or because adaptation would happen regardless.

Perceptions of how easy it would be to alter a particular dimension often affected its relative importance. Those seen to be easily changed were judged to be less important when assessing applicability/transferability compared to those considered immutable. However there lacked consensus about the various dimensions' flexibility.

Study Ranking Exercise

Many interviewees found the study ranking exercise difficult. Several failed to rank any or all of the studies and others explicitly commented on the difficulty of the task. The language used in responses was frequently cautious and hesitant. Responses were often framed in a subjective and uncertain manner, rather than being framed as 'fact' or more certain beliefs. Interpretations of the studies differed widely, in terms of both the interventions evaluated and their results. Although the interventions evaluated had multiple components, interviewees often only focused on individual components in their discussions.

The reasons given for study ranking decisions varied between studies. For example, those selecting the Tanzanian study (community-based plans for emergency transportation) as most applicable/transferable commonly explained that this was because transportation was a problem in Ghana or because

community empowerment approaches were felt to be generally successful. However interviewees who perceived the Nigerian study (loan and transport scheme) to be most applicable/transferable explained that a similar project was currently ongoing or had existed in Ghana.

Dimensions of applicability/transferability

A number of categories emerged from analysis of the data generated by all three of the techniques used in the interviews, although not every technique generated discussion on every dimension. These were organised into a revised framework comprising six dimensions: congruence, ease of implementation, adaptation, setting, effectiveness and study design and methods. Several factors were identified within most of the dimensions and are discussed in more detail below (see table 2 and figure 1).

Table 2: Dimensions of applicability/transferability emerging from the interviews

Dimension	Factors	Types of issues discussed
Congruence	With previous experience	Knowledge of similar project/programme
	With beliefs and values	Inherent value of intervention's approach or content
	With other evidence	Findings from other studies
Ease of implementation of the intervention	Intervention characteristics	Content or approach, cost, implementation challenges
	Capacity to implement	Acceptability, affordability, human resources, political will
	Sustainability of implementation	Ability to maintain implementation over time
Setting of intervention	Intervention need	Focused on pertinent health problem, addressed determinants of health problem
	Country-level influences	Geographical location and proximity, development level, within-country differences
	Population-level influences	'Culture', urban-rural settings, women's status, religion, social structures, literacy,

Effectiveness of the intervention	Original study findings	Outcomes presented, relevance of outcomes to Ghanaian context, interpretations of statistics
	Potential effectiveness	Based on: perception of Ghanaian situation, intervention approach, perceived ease of implementation or experience with similar interventions.
Research-specific factors	Methods/study design	Sampling methods, scale or coverage of intervention, methods of analysis
	Results	Additional information about findings
	General quality	Internal validity, 'soundness' of the study
Adaptation		Separate, essential phase of research use; adapt to suit Ghanaian context, to become implementable; may influence other applicability/ transferability factors.

Effectiveness

As previously mentioned, interviewees tended to focus more on applicability than transferability; the latter seemed poorly understood and was considered less important in all three techniques.

Two aspects of effectiveness emerged: the effectiveness of the original intervention and its potential effectiveness in the new setting. Where effectiveness was considered at all, more attention tended to be paid to the latter.

Interventions were generally assumed to be inherently effective, as long as it was possible to implement them successfully and they addressed a real need. This assumption persisted even where findings were presented in the study ranking exercise. Many interviewees did not seem to consider the findings when assessing the studies' applicability/transferability. Those that did generally mentioned them only as secondary reasons for their ranking decisions.

If interviewees did discuss the studies' outcomes, they generally focused on only one or two of the variables presented, rather than all of them. In these situations, they focused on indicators that they recognised as being a problem in Ghana. For example, most of those who mentioned the results of the Tanzania study (community-based plans for emergency transportation) focused on the positive finding that the cost of emergency transportation fell; transport costs were a recognised problem in Ghana. Fewer interviewees considered the percentage of villages which had developed action plans or used their implementation systems.

Interpretations of the findings from the India study (home-based life-

saving skills) were particularly complex, since some variables indicated positive findings, whilst others showed no effect or were not significant. Some interviewees focused on the proxy indicators of birth preparedness as explanations of the intervention's success, noting that a lack of birth preparedness was also a problem in Ghana. Others felt that the intervention wasn't successful because the number of referrals didn't increase. Some discussed the decline in maternal deaths as a positive finding, either explicitly or implicitly ignoring the lack of power needed to be confident that the result was not due to chance. A few explicitly ruled out the play of chance, feeling that the decline represented a definite, positive impact, whilst others felt that the lack of power made the findings unclear or unusable.

Although most interviewees did not consider the potential effectiveness of the interventions in the ranking exercise, those who did were more likely to base their judgement on factors other than the studies' findings, such as their perceptions of the causal problems in Ghana, the intervention's approach or its perceived ease of implementation.

"the women in the rural India [home-based lifesaving skills], I would go for that [as most applicable/transferable], because that looks more do-able, yes...I think that would work better than the health institutions or the health facilities imposing something on them, so I think this, this would really work." (043, researcher)

Many interviewees discussed examples of other projects or programmes that they knew about, in relation to potential effectiveness. Although evaluations of these programmes were almost never discussed, reference was commonly made to whether or not they were considered successful and/or effective.

A few mentioned that it would always be necessary to evaluate or pilot any intervention that was being implemented in a new setting.

Research-specific factors

The studies' design, methods and general quality were not included in the rating question, however they were mentioned by some interviewees in the brainstorm and, occasionally, in the study ranking exercise.

Of those that mentioned study design or quality issues in the study ranking exercise, the key factors appeared to be the sampling methods used, the scale or coverage of the intervention or the internal validity of the findings. A small number also expressed a desire for more information about the findings.

Congruence

Congruence refers to the degree to which the studies were aligned with interviewees' own experience, knowledge or beliefs. Although it came out strongly in interviewees' assessments of the applicability/transferability of

intervention evaluations in the study ranking exercise (study summaries), but it was rarely mentioned in response to the brainstorm and the rating question (list of dimensions). Two factors were particularly important: whether they had previous experience or knowledge of a similar intervention, and alignment with their beliefs and values.

Where interviewees knew of a similar intervention, this frequently overwhelmed their assessments of the studies in the ranking exercise, preventing them from considering any other factors of applicability/ transferability. Some were even unable to rank the studies because they were aware of similar interventions.

"...I don't know which one I should say is more applicable, because every one of them, we've tried, in a small scaling." (056, stakeholder)

It became clear when interviewees discussed the reasons for their ranking decisions that they frequently ranked the intervention they knew, rather than the one presented in the study ranking exercise. This occurred even where their intervention varied substantially from the study presented. Most of the examples cited by interviewees did not seem to have been formally evaluated, although their effectiveness appeared to be presumed.

"this is very applicable…Tanzania [community-based plans for emergency transportation] because we've seen that in [area], taxi drivers were mobilised and they were transporting pregnant women to hospital so, you know, it works… so that is my first one [most applicable/transferable]" (054, government staff)

Congruence with beliefs and values was another powerful factor. The importance of the perceived value of the intervention's overarching approach (e.g. community empowerment) became clear in the study ranking exercise. Several interviewees mentioned the benefits of involving the community or ensuring community ownership of an intervention, both to enhance its sustainability and for its general success. For example, many considered the India study's focus to be on training traditional birth attendants (TBAs) and their ranking of the study correlated with their beliefs about the value of TBA training. These beliefs were strong and divided (some believing TBAs were outdated and ineffective, others holding the opposite view) and this was reflected in their perceptions of the applicability/transferability of the study.

A final factor, congruence with other evidence such as other research findings, was mentioned very rarely.

Ease of Implementation

Factors conceptualised within 'ease of implementation' included

characteristics of the intervention (particularly in relation to the study ranking exercise), the capacity to implement the intervention and its sustainability.

The characteristics of the intervention included the general content of the intervention and its approach or focus (e.g. involving training or community empowerment), and the potential implementation challenges faced. The cost of the intervention was also frequently mentioned as a critical factor that affected perceptions of applicability/transferability.

Although the interventions' characteristics affected the perceived ease of implementation in the new setting, these perceptions varied widely between interviewees. The two quotes below illustrate how perceptions of the Niger study (solar radio and Land Cruiser ambulance) differed.

"…it's like the problem that they identified here [in the Niger study]. The private use…of the vehicle…when you need it to transport an emergency, probably the director's car is broken down, he'll want to use the ambulance to do something else…[the] tendency for abuse, is higher" (008, stakeholder)

"[*and what's the reason that you haven't put [the Tanzania study – community-based plans for emergency transportation] as number one or number two?*] yeah, because…planning can take time…and it can drag, while people are dying…You see that is why I'm putting [it ranked as] number three. But these [the Niger study intervention] are just, they are implementing it, you see…they are immediately

implementable." (037, government staff)

The perceived capacity to implement the intervention included discussion of issues such as their affordability and acceptability. Affordability was felt to be important and was associated with both the intervention characteristics and the resources (both financial and human) available in the new setting.

The interventions' acceptability was also frequently considered important in the rating question and study ranking exercise. In the study ranking exercise, acceptability was influenced by the intervention's characteristics. For example, concerns about acceptability were mentioned more often with regards to the Nigeria study (community emergency loan and transport scheme) than the India study (home-based life-saving skills), because a loan scheme was considered to be more contentious than training.

Although most interviewees focused on the acceptability of the intervention to the target audience, political acceptability and the acceptability to intervention providers were also occasionally noted.

Other issues noted as affecting the capacity to implement the intervention included the strength of the health system and the general infrastructure (e.g. whether there were accessible roads).

The perceived sustainability of interventions was another common

reason offered in the study ranking exercise, although it was rarely mentioned in response to the two other interview techniques.

Setting

The interviewees described setting in three ways: the perceived need for the intervention, the influence of country-level factors (e.g. level of development) and population-level influences. Although in the brainstorm and the rating question, interviewees stated that the comparability of the original research context and the new context was an important consideration, in the study ranking exercise, this did not seem to be a key factor affecting their assessments of applicability/transferability. The interviewees assessed the interventions with regards to their own setting alone, rather than comparing it to the research study setting.

The need for the intervention in the new setting was discussed in relation to the extent to which the health issue (or causal factor) focused on in the study was considered to be a problem in the new setting. This was an important factor raised in responses to all three techniques. For example, a common reason for positively ranking a study as applicable/transferable was because the interviewee recognised that the issue being tackled was also a determinant of poor maternal health in Ghana.

"And then secondly is, I will go for...the emergency transportation [Tanzania study – community-based plans for emergency transportation]... because transport is...a very big issue here...in Ghana." (043, researcher)

As the quote above highlight, several interviewees cited transportation issues as the reason for selecting one study over another, without acknowledging that the other studies also addressed transportation issues, albeit in different ways. This highlights how interpretations of the interventions varied between interviewees.

A key issue was geographical location. Some believed that West African studies may be more applicable/transferable to Ghana than those conducted in other parts of Africa or in other continents. Others felt any African country was similar enough to draw lessons from and a few took an even broader view, believing that lessons could be learnt from studies conducted in any low-income country. In contrast, several interviewees noted that there were differences within Ghana, which may affect the applicability/transferability of Ghanaian studies to different areas or between urban and rural settings.

Although geographical proximity was discussed in response to the 'abstract' interview techniques, it did not appear influential in the study ranking exercise.

Other country-level influences included governance (e.g. degree of stability or

colonial history), infrastructure and the general status of the health system, although the latter tended to be discussed in relation to the implementation of an intervention, rather than the comparability of health systems.

The final 'setting' factor discussed was population-level influences, particularly people's beliefs, values or more general 'culture'. Although these were generally viewed as difficult to change, a few interviewees argued that they were less important because interventions could be adapted to suit the population.

Adaptation

The adaptation of the intervention, to tailor it to suit the new setting, was considered crucial. Indeed for many it was such an intrinsic aspect of research use that they did not necessarily consider it to be part of an assessment of applicability/transferability. Rather, it was conceptualised as a separate phase and was often considered to be inevitable or essential.

"I think it's very difficult to take any one programme and cookie-cutter it…to any other country…there's basic fundaments to all programmes that are applicable anywhere…so the skeleton you can move from country to country, but it's the meat on those bones that has to change drastically." (004, stakeholder)

In the rating question, some, exemplified in the quote below, considered

adaptability to be less important specifically because it was an intrinsic part of research use and therefore not essential when judging whether or not research could be of use in the new setting.

"…there is no research that, no matter what happened you don't adapt. So for me …it's neither here nor there [when it comes to assessing applicability/ transferability]" (049, government staff)

Adaptation was a reason why certain dimensions were considered less important in the rating exercise. For example it was explained that differences between the study setting and new setting could be overcome by tailoring the intervention for the new setting.

"if you accept that adaptability of the intervention, that is an important thing then setting becomes less important because you would adapt it to the setting." (057, stakeholder)

Some emphasised the need to understand the issues in the new setting in order to be able to adapt it appropriately. Only a small number mentioned implications that adaptation may have on effectiveness. More often it was suggested that adaptation was necessary for successful implementation.

<u>Figure 1: Factors in applicability/transferability</u>

The relative size of the circles reflects the perceived importance of the factors. It does not reflect a quantitative measure. The proximity of the circles reflects the similarity of the concepts they represent. For this reason, 'adaptation' is separated from the other factors, to reflect the fact that many interviewees considered it to be a distinct phase of research use, rather than part of an applicability/transferability

assessment.

Differences between types of interviewees

Few major differences were observed in the perceptions of applicability/ transferability between the types of interviewees.

In the brainstorm, those raising issues of study design, methods and quality were most frequently national government staff; only a few of the researchers interviewed mentioned such issues. This may be due to the fact that they were generally asked about the applicability/transferability of their own research and so it would be expected that they knew and accepted their own methods, such that these were not considered to be important factors in their decisions.

In the rating exercise, sub-national government staff seemed less able to rate the dimensions of local applicability/transferability, compared to other types of interviewees. Policy stakeholders and researchers rated the acceptability of the intervention and the political environment higher than national and sub-national government staff.

The reasons given for interviewees' study ranking choices showed no

clear major differences between the types of interviewee; the most important factors for all types appeared to be whether there was an awareness of similar projects, followed by the interventions' approach and its congruence with the interviewee's beliefs.

Study findings was a factor that did seem to hold a different level of importance for the different interviewees. Sub-national government staff were less likely to comment on studies' findings when explaining their ranking decisions compared to other types of interviewees. Overall those who considered the studies' findings in their ranking reasons seemed to include a large proportion of interviewees who had completed postgraduate studies in high income countries. Researchers were more likely to express a desire for more information about the studies' findings than other types of interviewees.

Discussion

This study explored the factors affecting whether public health research from other settings was perceived to be of potential use to those working in or researching maternal health in Ghana. Influential factors tended to be pragmatic, based on experience and personal views of the needs and capacity of the setting. Congruence with previous experience or beliefs, as well as the perceived ease of implementation and need for the intervention, were important considerations. Study findings, design and methods were less important.

Adaptation was another crucial consideration, frequently viewed as a distinct step essential to research use.

Findings in relation to other studies

Applicability/transferability was a complex area for many interviewees. One reason for the difficulties experienced may stem from the fact that assessments of applicability/transferability are rarely explicit or formal (Dobrow et al., 2006). The two concepts were rarely discussed as two distinct elements, perhaps linked to the fact that emphasis was placed on implementation and understanding the problem, rather than effectiveness.

Knowledge of similar interventions seemed to have the strongest influence on whether interviewees felt studies were applicable/transferable. Previous research has also noted the importance of congruence with experience (Woelk et al., 2009, Weiss and Bucuvalas, 1980). Congruence with beliefs and values has also previously been recognised as affecting the likelihood of research use. Systematic reviews of perceived barriers and facilitators of research use found that research which confirmed a policy or self-interest was considered a facilitator (Innvaer et al., 2002, Lavis et al., 2005).

One explanation for the lack of attention to the studies' findings in the ranking exercise may be that it was difficult to compare their effectiveness (as is typical for these types of complex intervention evaluations) since they measured

different outcomes and were not large enough to be sufficiently powered to measure health impact (i.e. maternal death). However a lack of emphasis on effectiveness research in general was also find in the broader study of perceptions of the usefulness of research (Burchett, 2010).

In the interviews, the adaptation of interventions was considered a crucial aspect of research use. For many, it seemed to be conceptualised as a separate, distinct phase of knowledge translation rather than a component within applicability/transferability assessments. However few explicitly considered how adaptation may affect the potential effectiveness of the intervention. The tension between remaining faithful to the original intervention and adapting it to suit the new setting has been subject to several theoretical papers (Morrison et al., 2009, Castro et al., 2004, Backer, 2001). In contrast to the ideals of theory, where both 'fit' and 'fidelity' of the original intervention are necessary, our findings suggest that fit is prioritised over fidelity among decision-makers.

Findings in relation to existing frameworks

As far as the authors are aware, this study was the first attempt to use Wang et al.'s framework beyond an academic setting (Wang et al., 2006). It quickly became clear that, although useful for generating discussion, not all of the dimensions within their framework were considered important by the current

study's respondents and others that were valued were not incorporated in their framework. Issues of study quality were also not influential. Lavis et al. found that many healthcare managers and policy-makers in Canada and the UK assumed that research was conducted and interpreted appropriately, providing a possible explanation for the results of the current study (Lavis et al., 2005).

A systematic review of applicability/transferability frameworks identified four main dimensions that were included: the setting, intervention, outcomes and evidence (including the wider evidence base and the study quality) (Burchett et al., 2011). Frameworks did not appear to have been developed based on the views of potential users of the framework, nor tested with this audience. The current study advances knowledge in this field by testing a published framework and then revising it based on analysis of the views of decision-makers and researchers. Our findings suggest that existing frameworks do not reflect the factors considered to be most important in Ghana. The main differences between the proposed and existing frameworks are the inclusion in the former of the concepts of congruence and adaptation. In addition, the proposed framework does not separate the concepts of applicability and transferability. Finally, the current study suggests that effectiveness and research-specific factors may not be of high importance to those assessing applicability/transferability.

Finally, it should be remembered that interviewees gave different

reasons for ranking each of the four intervention evaluations in the study

ranking exercise, rather than comparing them all on the same dimensions. For

example, an interviewee may have rated the Tanzania study as more

applicable/transferable to their setting because of its approach, but reasoned

that lack of acceptability meant the Nigeria study was ranked least applicable/

transferable. This suggests that the relative importance of the dimensions would

depend upon the intervention being assessed, as some interviewees

mentioned explicitly.

Reflections on the interview techniques used

Responses to the brainstorm and rating question varied from those to the

study ranking exercise. For example, comparison of the similarities of the

populations and settings in the study and the Ghanaian contexts were

considered important in the first two techniques, yet rarely featured in responses

to the study ranking exercises. As mentioned above, in general the richer data

came from the study ranking exercise, where interviewees were able to engage

with real examples and then draw on their own knowledge and experience to

consider them in a way that seemed difficult with the more abstract techniques.

It is particularly notable that the issue of congruence only emerged as an

important factor during the study ranking exercise. This may have implications

for future research, suggesting the need for caution when analysing data

derived from more abstract techniques. Nevertheless, it was felt that the

brainstorm and the rating question were useful techniques to introduce the topic

of applicability/transferability. As discussed, interviewees found this to be an

abstract and challenging topic and so providing a staged approach to develop

their thoughts and discussion was undoubtedly valuable.

Implications for the evidence-based movement

In the study ranking exercise, interviewees tended to focus on individual

components of an intervention, rather than considering its multiple components

as a complete package. It may therefore be possible that, if deciding to use the

intervention in their own setting, decision-makers may choose to adopt only one

component, rather than the whole. This has important implications for the

potential effectiveness of complex interventions which have been designed so

that the components work together synergistically.

The lack of consideration of studies' findings also presents a challenge

for those advocating an evidence-based approach (which tends to be

dominated by the concept of effectiveness and traditional forms of outcome

evaluation such as randomised controlled trials) (McGuire, 2005). Given the

perceived importance of implementation and understanding the local problem,

study designs with an emphasis on the process and theory behind the

intervention (e.g. realist evaluations) may possibly be considered more 'useful'

for decision-making than traditional intervention evaluations (Pawson and Tilley, 1997, Paterson et al., 2009). The current study provides further evidence that the evidence-based movement must look beyond 'what works' to help answer decision-makers' other questions, such as those relating to context, implementability and the nature of health problems (Lomas, 2005, Sheldon, 2005, Hawe et al., 2004).

Finally, it is proposed that greater emphasis be placed on understanding issues of applicability/transferability. Those encouraging research use should be wary of blindly pushing for more research use, but rather should focus on encouraging *appropriate* research use (i.e. only where it is considered applicable/transferable). There is also a need for greater understandings of how research is interpreted and used.

Strengths and Limitations

Relatively little has been published about applicability/transferability. Most articles on the topic are theoretical essays or commentaries, rather than empirical studies. This study has begun to address this gap, by exploring perceptions of applicability/transferability amongst both decision-makers and researchers.

Innovative techniques were used, which add to the methodological evidence base for studying research use perceptions. Their role in the current

study confirms the usefulness of employing a variety of techniques to explore complex, abstract issues in qualitative research and as tools for generating discussion.

Some may criticise the use of Framework Analysis, arguing that by breaking down the transcripts into codes, the meanings running through each transcript may have been lost, whilst summarising the data may have lead to misinterpretations. However the authors believe that, through deep familiarisation with the interview data, ongoing reference back to the original transcripts, as well as exploring data across codes, such threats were limited.

This study's generalisability may be limited, since it focused solely on one topic area in one country. However the rigour applied to the study process, in documenting the data collection and analysis methods, means that the study design is transferable to other settings and topics. If other studies were conducted using this process, it would enable a body of knowledge to be developed, across which commonalities and differences could be explored.

Conclusion

This is one of the first studies to empirically explore perceptions of applicability/transferability among decision-makers and researchers. Further work is now required to operationalise the framework set out in this paper. It can then be assessed in terms of its usefulness and appropriateness can be

assessed in other settings, with different topics and for a range of potential

users. It is unlikely that a framework would be used explicitly by decision-

makers for the assessment of a study's applicability/transferability, due to the

nature of both decision-making (complex, involving a range of influencing

factors beyond research alone) and research use (which rarely direct and

explicit) (Weiss, 1979, Walt, 2007, Hanney et al., 2003). However there are

other ways in which it may be of use. For example, it may help to identify

common weaknesses or gaps in the evidence base and so encourage

developments in research design and reporting that make it easier for decision-

makers to judge its applicability. It could also be used to encourage the

appropriate use of research, possibly employed by those taking on a

'knowledge broker' role or those conducting, or making available, evidence

syntheses.

  To conclude, improved understandings of applicability/transferability will

help to strengthen research use in decision-making, through enhanced

research design and study reporting as well as through improved

understandings of how decision-makers judge applicability/transferability. This

should help to encourage the appropriate use of the wider evidence base

beyond national settings.

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 The final applicability attribute in their framework, relating to the organisational structure and skills of local interventionists, was excluded because, in the initial interviews, it was found to be too similar to 'resource implications' and 'capacity to implement the intervention', causing confusion and repetition.