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Original Research

Exploratory study of the role of knowledge brokers in translating knowledge to action following global maternal and newborn health technical meetings

T.C. Norton ^{a,*}, C. Howell ^{b,1}, C. Reynolds ^{c,2}^a Jhpiego, 1615 Thames Street, Baltimore, MD 21231, USA^b Save the Children, 2000 L Street NW, Suite 500, Washington, DC 20036, USA^c Jhpiego, 1776 Massachusetts Avenue, NW, Suite 300, Washington, DC 20036, USA

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ABSTRACT

Objectives: There have been increasing calls for more research on interventions to successfully translate evidence-based knowledge into improved health policy and practices. This paper reports on an exploratory study of knowledge translation interventions conducted with participants of global health meetings held in Bangladesh in 2012 and in South Africa in 2013. We measured stakeholders' uptake of evidence-based knowledge in terms of their translation of this knowledge into actions around public health policy and practice. The research sought to determine whether participants shared and used knowledge from the meetings to improve health policy and practices in their settings and the factors influencing sharing and use.

Study design: An exploratory study employed quantitative and qualitative methods of online surveys and in-depth interviews to collect data from all meeting participants.

Methods: All participants in the Bangladesh and South Africa meetings were invited to complete an online survey during the meetings and over the following six weeks. Of 411 participants in the 2012 Bangladesh meeting, 148 participants from 22 countries completed the survey. Eleven of these respondents (from eight countries) were interviewed. Of the 436 participants in the 2013 South Africa meeting, 126 respondents from 33 countries completed an online survey; none of these respondents were interviewed.

Results: The analysis revealed that most respondents used new knowledge to advocate for policy change (2012: 65.5%; 2013: 67.5%) or improve service quality (2012: 60.1%; 2013: 70.6%). The type of knowledge that respondents most commonly shared was clinical or scientific information (2012: 79.1%; 2013: 66.7%) and country-specific information (2012: 73.0%; 2013: 71.4%). Most 2012 respondents shared knowledge because they thought it would be useful to a co-worker or colleague (79.7%).

Discussion: Findings on knowledge use and sharing suggest that most respondents saw themselves as knowledge brokers or intermediaries in a position to influence the translation of knowledge into action in health policy and practices in their countries. Results

* Corresponding author. Tel.: +1 410 537 1801; fax: +1 410 537 1476.

E-mail addresses: Theresa.Norton@jhpigo.org (T.C. Norton), Kate.Howell@jhpigo.org (C. Howell), Charlene.Reynolds@jhpigo.org (C. Reynolds).¹ Present address: Jhpiego, 1776 Massachusetts Avenue, NW, Suite 300, Washington, DC 20036, USA.² Present affiliation: Jhpiego/Maternal and Child Survival Program.<http://dx.doi.org/10.1016/j.puhe.2016.04.012>0033-3506/© 2016 Jhpiego Corporation. Published by Elsevier Ltd on behalf of The Royal Society for Public Health. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).Please cite this article in press as: Norton TC, et al., Exploratory study of the role of knowledge brokers in translating knowledge to action following global maternal and newborn health technical meetings, Public Health (2016), <http://dx.doi.org/10.1016/j.puhe.2016.04.012>

suggest that supporting knowledge brokers working in a local and regional context to spur change, as described in the paper, has the potential to improve health outcomes. Further research is needed to isolate specific interventions and their knowledge translation outcomes.

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Introduction

Taking advantage of opportunities to increase the uptake of knowledge of ‘what works’ in health policy and practice—reducing what is sometimes called the ‘know-do’ gap—is an urgent need in public health and one of growing interest.^{1–6} Applying research evidence leads to high-quality and cost-effective health care and optimal health outcomes, but the ‘know-do’ gap often results in that research evidence not being translated into action.^{3–5} Consequences of the know-do gap are most evident in avoidable deaths among the poor and marginalised and failure to reduce health inequalities.^{2,7} Among the relevant terms mentioned in know-do theories and models, and one growing in use is ‘knowledge translation.’

Knowledge translation refers to the synthesis, dissemination, exchange, and application of knowledge among research providers and users to improve health outcomes through evidence-based policy and practice.^{1,8,9} The World Health Organisation's (WHO's) *World Report on Knowledge for Better Health: Strengthening Health Systems*¹⁰ identified translation of knowledge from science to practice as a priority action for reaching Millennium Development Goals by 2015.

A number of models and frameworks have been proposed to explain successful approaches to knowledge translation, such as Graham et al.'s Knowledge-to-Action (KTA)

framework⁴ (Fig. 1). This framework provides a useful conceptual basis for analysing evaluation data on knowledge translation interventions in global health programs, as is discussed later in this paper. The KTA framework portrays the movement of knowledge to application in two main processes, knowledge creation and knowledge action, which overlap and interact in a cycle of evaluation and refinement over the course of a health program. Important aspects of knowledge translation frameworks such as this one include interrelated processes for creating and synthesising knowledge, distributing knowledge tools and products, and adapting knowledge to local interventions that successfully address barriers to implementation. A role often mentioned in these KTA processes is that of a knowledge broker.

Knowledge brokers: facilitators of knowledge translation

In knowledge translation processes, knowledge brokers facilitate interactions between researchers and users who apply research findings to policies and practice.^{2,5,11} Knowledge brokers help research users adapt findings to a local context. Individuals, as well as organisations,^{11,12} fill the role of knowledge brokers.⁶

Both organisational and individual knowledge brokers play a part in global health development. Many organisations work

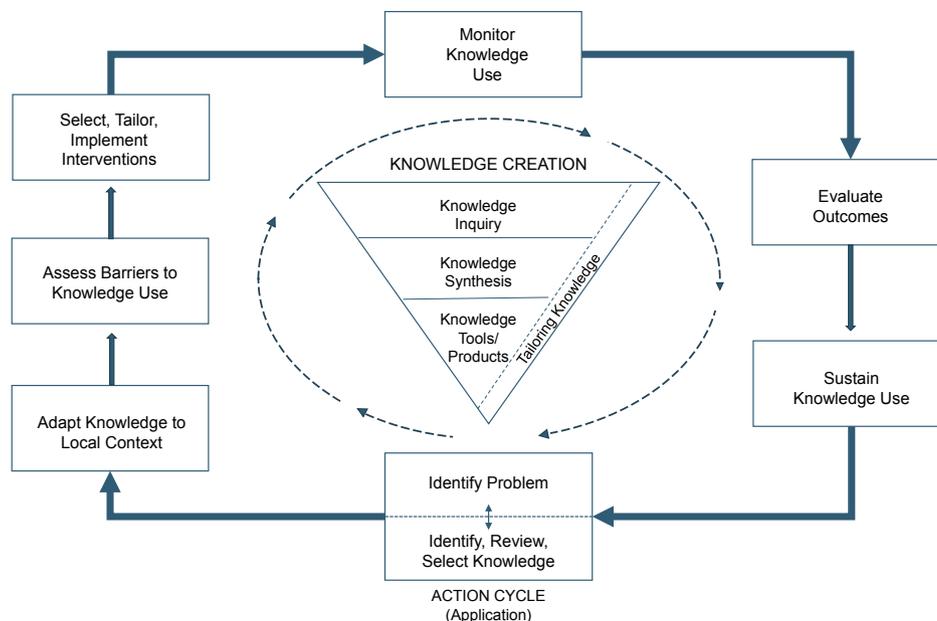


Fig. 1 – Graham's knowledge-to-action framework.

across geographic and financial boundaries to create and act on knowledge, which leads to improved evidence-based health policies and practices.¹³ These knowledge brokering organisations include non-governmental organisations (NGOs) and international health organisations such as the WHO and United States Agency for International Development (USAID) and its implementing partners—such as partners of the Knowledge for Health Project¹³ and the Maternal and Child Health Integrated Program (MCHIP).^{14,15} Within these organisations, individual brokers act as catalysts to bring together stakeholders and move knowledge creation to action. The data examined in this paper illustrate the role of knowledge brokers in knowledge translation.

Background

This paper focuses on knowledge translation efforts of global health programs such as USAID's MCHIP (led by Jhpiego), Save the Children's Saving Newborn Lives (SNL) Program, and programs supported by UNICEF and other major donors. These programs aimed to scale up evidence-based, high-impact maternal, newborn, and child health interventions in low-resource countries to reduce mortality and improve service quality.¹⁴ To this end, MCHIP, SNL and other similar organisations integrated knowledge translation into implementation of its programs. These organisations and programs served as knowledge brokers between global leaders, such as the WHO, and country stakeholders and also cultivated individual knowledge brokers in the countries where they worked to foster change.

One knowledge brokering approach utilised by these maternal and newborn health programs was to periodically hold technical meetings with stakeholders in Africa, Asia, and worldwide. The format of the maternal and newborn health technical meetings, as shown in Fig. 2, included knowledge creation and knowledge action activities that coincided with Graham et al.'s KTA Framework.⁴ Meeting planners carefully selected and grouped participants according to country, forming country teams composed of health professionals in roles needed to galvanise action on the conference topic. Roles

included policy advocates, healthcare practitioners, and health program managers. Before the meetings, planners and country teams created a synthesised list of priority technical problem areas (e.g. postpartum haemorrhage) to address during the meetings, which provided a focus for later action.

Based on meeting priorities, country teams analysed their local or regional situation regarding the technical problems and created a synthesised view of the analysis (a knowledge product in the form of a poster) to share with other country teams at the meetings. In addition to providing a knowledge product, the synthesis process helped country teams prepare their thinking for acquiring new technical knowledge during the meetings and tailoring the knowledge to local needs after the meetings. Meeting planners also created knowledge products, such as key message briefs linking evidence to the technical problem, to use during and after the meetings as an aid for action.

During the meeting, participants worked together to prepare for action after the meetings. Preparation included discussing barriers to implementation with global experts (e.g. the WHO) and other country teams and drafting action plans. Interactive, skill-building sessions (such as practicing the Helping Babies Breathe[®] newborn resuscitation technique) also helped participants prepare for acting on the knowledge after the meetings.

The work of the meeting planners and country teams as knowledge brokers led to successful knowledge creation and transition to knowledge action as shown by data collected from participants after the meetings and external reports and communications.

The actions of the Pakistan team before, during, and after the 2012 Bangladesh conference offer a good example of how the process worked. In 2012 the team from Pakistan was composed of members working for UN agencies, government, NGOs, and academic institutions in the areas of program development and management, health service delivery, advocacy, and teaching and training. In preparing their country situational poster, the Pakistan team identified priority interventions for their country related to preventing postpartum haemorrhage and pre-eclampsia/eclampsia. This

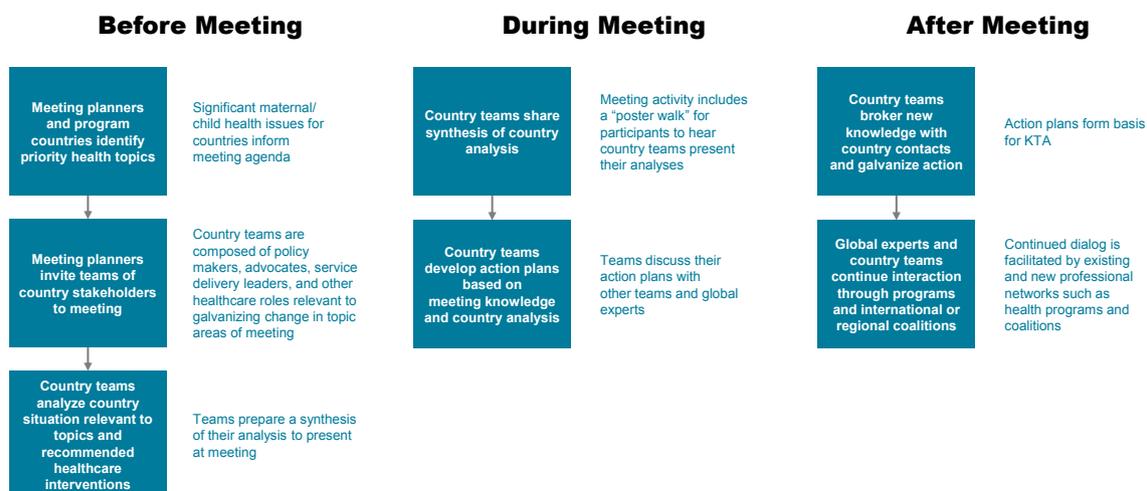


Fig. 2 – Before, during, and after steps of the meeting process.

preliminary action plan was refined during the conference. The Pakistan poster also identified planned advocacy activities, including forming a Maternal, Newborn, and Child Health (MNCH) Pakistan Advocacy Group. Other plans included knowledge brokering activities with stakeholders, such as organising seminars and technical update sessions about evidence-based interventions.¹⁶

According to interviews and survey responses, one of the areas in which the Pakistan team gained knowledge during the conference was on the use of misoprostol to prevent postpartum haemorrhage. After the conference, the team worked with provincial departments of health, professional bodies, academic institutions, civil society organisations, and development partners to advance the introduction and scale-up of evidence-based interventions to prevent postpartum haemorrhage.¹⁷ These interventions, called out in the Lahore Declaration of 30 May 2012, included adding misoprostol to the essential drug list.¹⁷ While not directly related to the work of the MNCH Pakistan Advocacy Group, a media report in *The [Pakistan] Express Tribune* on 11 January 2013 noted inclusion of misoprostol on the Peshawar provincial essential drug list.

Research purpose

This paper assesses the effectiveness of two maternal and newborn health technical meetings as knowledge translation interventions. The purpose of the research was to: (1) evaluate whether knowledge gained from the meetings was used by participants to address global health policy and practice and was shared with other global health practitioners; and (2) identify factors influencing participant knowledge sharing and use.

Methods

Study design, settings, and response rates

This exploratory study employed quantitative and qualitative methods for data collection. The methods consisted of online surveys offered to participants of a maternal and newborn health meeting in 2012 in Bangladesh and a newborn health meeting in 2013 in South Africa and individual interviews with participants of the 2012 Bangladesh meeting.

Everyone who attended the two maternal and newborn health technical meetings was invited to participate in the study. The first meeting studied was held in Dhaka, Bangladesh, in May 2012 with 411 participants from 30 countries.¹⁶ The second meeting was held in Johannesburg, South Africa, in April 2013 with 436 participants from 50 countries.¹⁸

At the meetings, organisers invited all attendees to complete a survey at a computer kiosk. Responses rates during the meetings were 8% for the 2012 Bangladesh meeting and 25% for the 2013 South Africa meeting. Researchers sent email reminders within six weeks after the meeting to all attendees asking them to complete the survey online. A total of 148 respondents completed the 2012 Bangladesh survey (a response rate of 36%), 11 respondents agreed to an interview in 2012 (a response rate of 3%), and 126 respondents completed the 2013 South Africa survey (a response rate of 29%). Interviews with

2012 Bangladesh participants were conducted five to six months after the meeting.

Data collection and ethics approval

The surveys were created using SurveyMonkey®, a web-based service (www.surveymonkey.com). Questions asked about respondents' characteristics (such as country, type of work, and type of organisation), knowledge-use behaviours (such as how they applied or intended to apply knowledge they gained at the meeting to their work), and knowledge-sharing behaviours (such as with whom they shared or intended to share knowledge from the meeting and motivation for sharing). Some of the survey questions were open-ended (e.g. examples of knowledge use). For the 2012 Bangladesh survey, respondents could also agree to be contacted for an interview. No other personally identifiable information was collected. Respondents were not paid for participating, but they could elect to enter their email address for a prize drawing as a thank-you for participating in the survey.

For the 2012 interviews, a student intern was engaged by the research team to contact respondents who agreed to be interviewed. She scheduled and conducted the interviews. The intern was a candidate for a master's degree in public health and also held a Doctor of Medicine degree. She did not have a prior relationship with the participants. Of the 62 respondents providing contact information for a follow-up interview, 11 responded to an email message and agreed to a date and time for an interview. The interviewer began by reading the oral consent script and getting the respondent's verbal agreement to be interviewed and recorded. Then the interviewer asked a series of open-ended questions, followed by probes to expand on answers. Following the interviews, the intern transcribed the recordings, omitting any personally-identifiable information other than country, type of work, and type of organisation.

The 2012 Bangladesh research was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB). The IRB excluded the 2013 South Africa research from the human subject research approval process because the authors performed a secondary analysis of de-identified data collected by another team among the meeting planners.

Data analysis

Independent variables in the quantitative analysis were participant's type of work, type of organisation, and location. Two knowledge translation outcomes were analysed: extent of meeting knowledge use in health policy and practice and extent of sharing of meeting knowledge.

Redacted transcriptions (without identifiers) from the 2012 interviews were analysed by manually identifying common themes related to the study questions, documenting unusual responses, and compiling illustrative quotes. These themes were then used to characterise open-ended responses to the surveys. Open-ended survey questions captured examples of knowledge use. Examples were collected in the 2012 Bangladesh survey ($n = 55$), 2013 South Africa survey ($n = 71$), and 2012 interviews ($n = 11$). Team members analysing

qualitative responses were different from those analysing quantitative responses.

Results

Characteristics of respondents

Respondents to the 2012 Bangladesh and 2013 South Africa surveys represented a wide range of regions and experience. Respondents from both surveys ($n = 148$ in 2012; $n = 126$ in 2013) reported being based in Africa, Europe, North America, and Southeast Asia (22 countries in 2012; 33 countries in 2013). The largest proportion of 2012 Bangladesh respondents reported being based in Southeast Asia, while most 2013 South Africa respondents reported being based in Africa. Program developers/managers represented the largest percentage of respondents (45.9% in 2012; 54.8% in 2013), followed by health/medical service delivery personnel (25.7% in 2012; 15.1% in 2013). Most respondents worked with local and international NGOs (43.9% in 2012; 34.1% in 2013).

Table 1 presents survey responses for type of organisation and type of work for the 2012 Bangladesh maternal and newborn health meeting and 2013 South Africa newborn health meeting.

Use of knowledge from the meetings

Fig. 3 shows the types of use of (or intended use) knowledge from predefined categories. Advocacy for policy change (65.5% in 2012) and service quality improvement (70.6% in 2013) were the two uses most commonly cited. Examples of use reported through open-ended responses and interviews provided additional details about use. Respondents frequently mentioned taking an active role in sharing by packaging the knowledge into new products, though they categorised this as a type of use and included words such as ‘disseminate,’ ‘forward,’ and ‘tell.’ Respondents in all reported types of work gave examples of knowledge use.

Advocating for policy change

Interview respondents gave multiple examples of using knowledge gained from the meetings to advocate for policy change, such as adding drugs that were part of interventions described at the meetings to the essential medicines lists.

We have changed. Misoprostol was not part of the essential drug list, and due to the group following the conference...[it] has been incorporated in provincial essential drug list. (Advocate/trainer, Pakistan; 2012 interview).

Other advocacy examples involved adapting meeting knowledge for use in a local context and sharing with those in a position to change policies.

My country team is developing a post conference plan that will include general information on the newborn, lessons learnt from the conference, and recommendations on what lessons we can adapt or replicate as well [as] how these will align with our national policy on child health. The plan will be shared with the host country health leadership for adaptation. As the focal point for the Agency, I will follow-up with the Ministry. (Program developer/manager, Ghana; 2013 survey).

Improving healthcare service quality

Examples of knowledge use for improving health care included changes in service delivery at the hospital or community level, modifications to training, and practice of new techniques with provincial staff.

I met with the KMC [Kangaroo Mother Care] committee of the national maternity hospital where the largest KMC program in the country is being implemented, shared the information, and planned on a follow-up workshop in ‘next steps’ to further improve the program, in particular documentation and ambulatory KMC (NGO/PVO worker, Philippines; 2013 survey).

Designing projects or programs

Respondents who gave examples of use of new knowledge to design programs reported that they shared the information with groups involved in program or project design in order to

Table 1 – Type of organisation and type of work for 2012 and 2013 survey respondents.

Demographic attribute		Percentage of respondents		
		2012 Survey ($n = 148$)*	2013 Survey ($n = 126$)	Total ($n = 274$)
Type of organisation	Academic/research institution	12.2%	10.3%	11.3%
	Donor	11.5%	12.7%	12.0%
	Government/ministry	8.1%	20.6%	13.9%
	Medical/health organisation	7.4%	4.0%	5.8%
	NGO/PVO (local and international)	43.9%	34.1%	39.4%
	Private sector (for profit)	0.7%	2.4%	1.5%
	United Nations System	11.5%	14.3%	12.8%
Type of work	Other	4.7%	1.6%	3.3%
	Advocacy	3.4%	2.4%	2.9%
	Health communication	0.7%	2.4%	1.5%
	Health/medical service delivery	25.7%	15.1%	20.8%
	Policymaking	1.4%	10.3%	5.5%
	Program development/management	45.9%	54.8%	50.0%
	Research/evaluation	10.1%	7.9%	9.1%
	Teaching/training	6.8%	4.8%	5.8%
Other	6.1%	2.4%	4.4%	

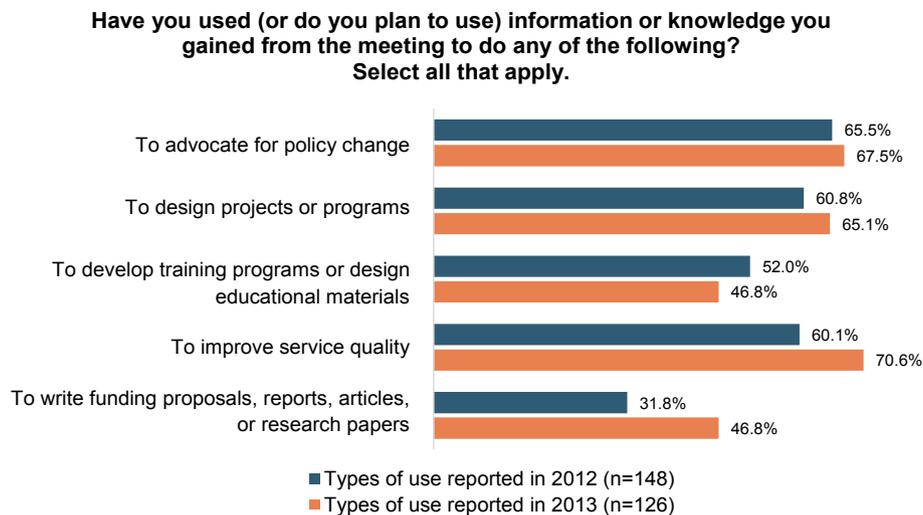


Fig. 3 – Types of use (or planned use) of knowledge by 2012 and 2013 respondents.

gain acceptance of an intervention that was discussed at the meetings.

New preventive interventions in PPH [postpartum haemorrhage] and PE/E [pre-eclampsia/eclampsia]...going to discuss it with the technical working group of RH [reproductive health] and we will have a plan to mainstream them in essential obstetric care for midwives and doctors. (Policymaker, Yemen; 2012 survey).

Developing training or educational materials

Several examples of use mentioned conducting training of healthcare providers on the newborn resuscitation technique covered in the skills sessions of the meetings.

Helping Babies Breathe (HBB): in July 2012... [we] added a skills test for HBB to the clinical standardized service training for the clinical staff of the medical college [in the state of Jharkhand in India]. (Program developer/manager, India; 2012 interview).

Using clinical information for writing/sharing

Other examples respondents gave included using information for health care-related procurement and guidelines.

Disseminate the clinical updates of misoprostol and give inputs to [name of NGO in a country]'s international procurement department for how to procure misoprostol. (Program developer/manager, Myanmar; 2012 survey).

Integration of HBB [Helping Babies Breathe] in the BEmOC [basic and emergency obstetric care] and ENC [essential newborn care] guidelines. (Program developer/manager, Senegal; 2013 survey).

Sharing information or knowledge from the meetings

Respondents to both surveys reported being more likely to share information with people they knew than with others

outside of their close contacts, such as members of online discussion groups (Fig. 4).

Meeting respondents also reported sharing most types of information (Fig. 5). Clinical or scientific information (79.1% in 2012) and country-specific information (71.4% in 2013) had the highest percentage of responses, which were similar to percentages for other types of information, with the exception of information about journal articles or publications (45.3% in 2012; 32.5% in 2013).

Reasons for sharing or not sharing knowledge

When asked why they shared information gained from past or current meetings, respondents to the 2012 Bangladesh survey most often said they thought it would be useful for a co-worker or colleague (79.7%) or others in their field (75.0%). Over half also cited their desire to improve service delivery (59.5%), and that reasoning was confirmed in interviews.

Among the small number of respondents who gave a reason why they did not share knowledge from the meeting (8.8% in 2012; 7.1% in 2013), not enough time to share (4.1% in 2012; 6.3% in 2013) and language as a barrier (3.4% in 2012; 0.0% in 2013) were the leading reasons.

Discussion

The purpose of this research was to evaluate the effectiveness of maternal and newborn health technical meetings that were designed to promote knowledge creation and knowledge brokering in moving evidence-based knowledge to action to improve health policy and practice. Specifically, the research sought to determine if meeting knowledge was used and shared by participants and the factors influencing use and sharing.

Anecdotal evidence suggests that the technical meetings described in this paper—which incorporated knowledge creation and action processes similar to Graham et al.'s KTA framework⁴—yielded intended outcomes in the form of

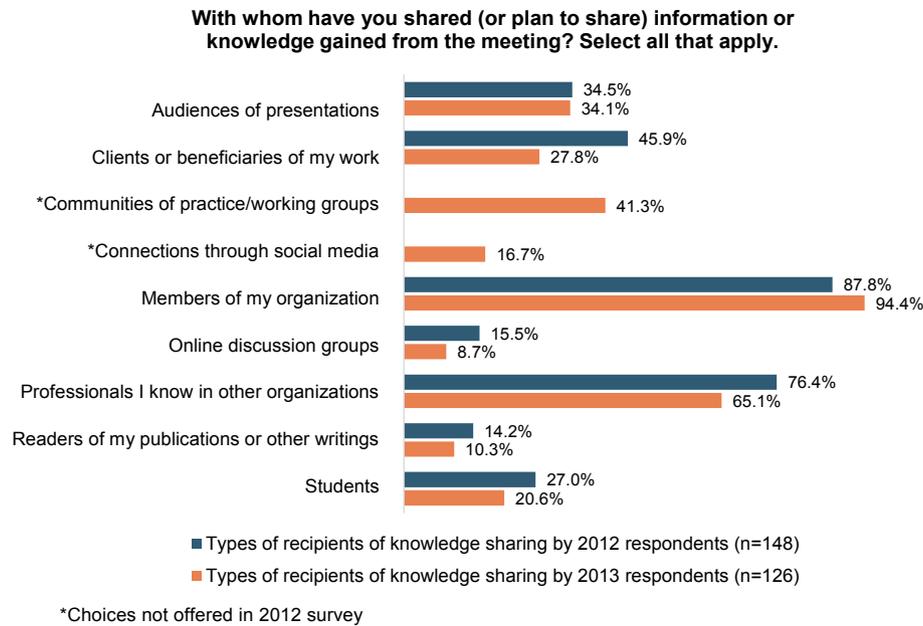


Fig. 4 – Types of recipients of knowledge sharing by 2012 and 2013 respondents.

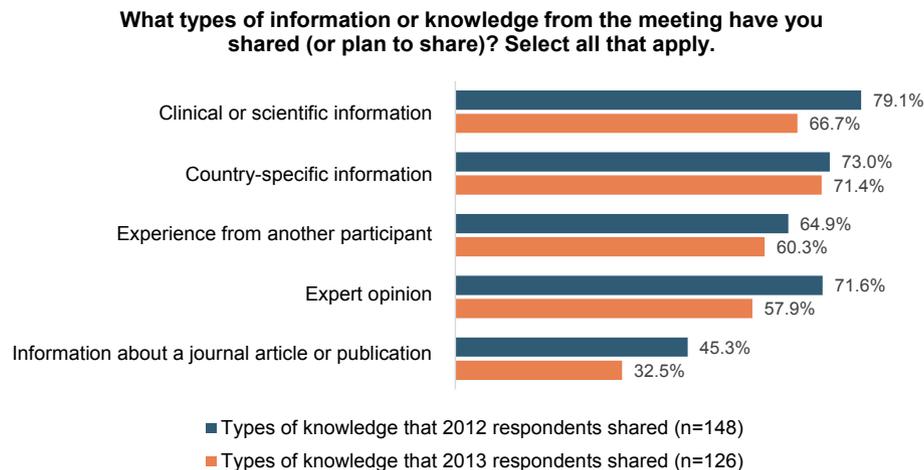


Fig. 5 – Types of knowledge shared (or planned to share) by 2012 and 2013 respondents.

scaled-up interventions. For example, follow-up communications with country teams after the 2012 Bangladesh meeting suggested that engagements at the meeting contributed to calls for action in Asia and Sub-Saharan Africa to scale up the use of misoprostol as an intervention to prevent postpartum haemorrhage, now recognised globally as an essential commodity.^{17,19,20} Following the 2013 South Africa meeting, India's health ministry announced significant policy changes relating to scaling-up key interventions related to newborn health.²¹

Study results show that meeting participants did use and share the knowledge in order to improve health policy and practice and that a desire to share useful information with

colleagues was a motivating factor. Open-ended responses and interviews mentioned aspects of the meetings that literature shows are facilitators for KTA.^{6,22} For example, the importance of human interaction came across in comments about country teams working together prior to, during the meetings and continuing efforts after the meetings, as did mentions of redistributing knowledge to colleagues. Another KTA facilitator—interactive learning activities for decision-makers—was referenced multiple times by participants who trained others after the meeting on the Helping Babies Breathe technique they learned during the skills sessions. The meetings' approach of engaging participants from multiple health care roles and at multiple stages—before, during, and after a

technical meeting—is a promising practice for moving participants from knowledge to action.

According to the responses, many respondents see themselves as knowledge brokers. Multiple examples of use described repackaging and sharing evidence-based knowledge to influence uptake in policy and practice, a typical role for a knowledge broker. Evidence suggests that knowledge brokers can be most effective when facilitating uptake of knowledge in the form of key messages with an audience predisposed to act on evidence.⁵ The meetings' design reflected this promising practice by focussing on a few technical problems with associated technical briefs and other knowledge products that participants could take back to their countries for use. Multiple open-ended responses and interviews mentioned the content of the key messages, which suggests that they resonated with participants. The combination of focused key messages with knowledge products that can be adapted for local use by knowledge brokers is another promising practice for translating knowledge into action.

Limitations

A limitation of the 2012 Bangladesh survey and 2013 South Africa survey was the low response rates (36% in 2012; 29% in 2013) and self-selection of respondents. Those who chose to respond may have been exceptionally motivated to act on knowledge. In addition, unlike in 2012, no in-depth interviews were conducted in 2013.

Conclusions

An interactive meeting format alone does not ensure knowledge translation afterwards.²³ Engagement of country teams and meeting planners in a process involving actions before, during, and after meetings—as described in this paper—are needed to facilitate KTA in a local context to improve health policy and practice. Supporting knowledge brokers at technical meetings in ways that incorporate knowledge creation and action processes (as described by Graham et al.⁴) before, during, and after the meeting is a promising practice for knowledge translation to improve health policy and practice. While the findings described in this paper do not clearly associate specific meeting design and participant attributes with intended knowledge translation outcomes, respondents' comments about the meetings' elements suggest that promising practices for planning meetings include knowledge translation interventions such as those described in this paper. Further research is needed to isolate the effects of KTA interventions on intended outcomes in global health policy and practice.

Author statements

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Ethical approval

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Competing interests

The authors report no competing interests.

Authors' contributions

TN was involved in designing the study, analysing data, and drafting the manuscript. CH helped draft the manuscript, analyse data, and design the survey for the 2013 South Africa meeting. CR reviewed and helped revise the manuscript, helped plan the 2012 Bangladesh meeting, and provided input on the survey for the 2012 Bangladesh meeting.

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