

The Role of Health, Learning and Leadership Institutions in Schistosomiasis Research Uptake in Ingwavuma Area, uMkhanyakude District, KwaZulu-Natal, South Africa.

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Abstract

Background: MABISA (Malaria and Bilharzia in Southern Africa) project generated knowledge on schistosomiasis trends, prevalence, intensity and incidence under changing climatic conditions. Uptake of this knowledge may benefit the affected communities in the uMkhanyakude area to develop strategies that may reduce their vulnerability to schistosomiasis. Research uptake (RU) is dependent upon the engagement of various stakeholders who are likely to utilise the generated knowledge. This study purpose is to determine the role of health, learning and leadership institutions in the uptake schistosomiasis research findings.

Methods: In-depth interviews with 18 key informants purposively selected from health, educational and social institutions were conducted. Thematic analysis was used to analyse the data. Roles played by each stakeholder in community health communication were determined. The stakeholder's power to influence the community and their interest for reducing the burden of schistosomiasis were interpreted using the Boston matrix.

Results: The stakeholder analysis showed that teachers and nurses have a high influence and interest in solving the problem and can be partnered with in delivering schistosomiasis RU interventions. Councillors and village headmen had high influence but low interest in the problem of schistosomiasis but could participate in intervention activities or be consulted before the interventions are implemented. Health workers had high interest in the problem but had low influential power. They, however, can be consulted or be provided with information to share with the people they interact with in the community. The library had low interest in the problem; however they could assist by disseminating information about schistosomiasis through distribution and display of learning materials to library users.

Conclusions: We concluded that knowledge uptake is highly influenced by stakeholder's choice of communication channels. The role of stakeholders is determined by their interest, influence and ability to implement interventions. Therefore, for effective schistosomiasis knowledge uptake to occur, capacity building in health communication channels and buy-in by stakeholders are essential.

Contributions To Literature

The study assesses opportunities and strategies for translation of project research findings through partnership with community stakeholders.

Study explores the relevance of stakeholder analysis in assigning correct roles to identified stakeholders during research dissemination.

Study describes the different communication channels that can be used for knowledge translation in typical rural community settings.

Background

Schistosomiasis is a chronic and debilitating disease caused by parasitic flat worms called schistosomes that infect the urinary tract or the intestines. Symptoms of schistosomiasis include abdominal pain, diarrhoea, blood in stool and blood in urine. The major focus of schistosomiasis preventive chemotherapy is delivery of praziquantel by mass drug administration to those shown to be, or presumed to be, at-risk of infection and disease (Tchuenté, Rollinson et al. 2017). In Africa the most common risk factor leading to transmission of the disease among school children and parents is swimming, washing clothes and bathing in rivers, fishing as well as farming especially in rural areas where the levels of poverty are high (Oluwasogo and Fagbemi, 2013; Kapito-Tembo et al., 2009; Grey et al., 2011).

The Malaria and Bilharzia in Southern Africa (MABISA) project conducted research in Ingwavuma area to determine the prevalence of schistosomiasis in a semi-arid area under changing climatic conditions between the year 2015 and 2017. Intensive schistosomiasis screening was done by the MABISA project in association with multiple level stakeholders affected by the disease in the Ingwavuma area. The research concluded that there is a high incidence and prevalence of schistosomiasis in the area caused by socio-economic variables such as distances of households from operational piped water collection points, distance from open water sources, religion, toilet use, household places of bath and laundry (Manyangadze, Chimbari et al. 2016) (Kabuyaya, Chimbari et al. 2017).

The field of research uptake became popular since the late nineties when it was widely adopted in clinical settings as evidence-based practice and in grant projects where it was prescribed as knowledge to action for community development projects and policy making (McKibbin, Lokker et al. 2010). Enumerable discoveries made in clinical treatment and community health by researchers led to the stimulation of interest in the application of findings to the communities and individuals to whom they could benefit (Graham, Logan et al. 2006). Use of research findings is expected to lead to improved health systems, which have long term positive solutions on the health of the populations (Kothari and Armstrong 2011).

The term knowledge translation was coined by the Canadian Institution of Health Research (CIHR) to refer to the same process of supporting the uptake of health research in a manner that improves the health of a population (Stuurman, 2002). Knowledge translation seeks to fill the gap between knowledge about disease and implementation of that knowledge, especially in developing countries (Sanders and Haines 2006). KT also seeks to change or influence knowledge, attitudes and perceptions about causes, prevention and treatment of diseases in communities (Unahalekhaka, Pichpol et al. 2013). KT also entails that research findings should be converted into knowledge units that may be used to guide policy and practice change in organisations and communities (Grimshaw, Eccles et al. 2012).

Grobbelaar and Harber (2016) define KT as the process by which knowledge generated through research finds its way to those who can make use of it (Grobbelaar & Harber, 2016). It is a dynamic and iterative translation process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge or researcher findings within a complex system of relationships among researchers and knowledge users to improve health, provide more effective health services and products, strengthen the health care system (Straus, Tetroe et al. 2009) (Ellen, Lavis et al. 2011) and to effect behavioral change (Stuurman, 2002)(Straus, Tetroe, & Graham, 2009).

It has been argued that knowledge translation cannot be fully achieved by a downward push of findings from researchers to the researched; there is a need for the participation of key parties or organisations (stakeholders) in the process of research translation (Reed 2008). Reflections on the process of research translation have shown the need to incorporate the aspect of participatory action research in order to increase the possibility of research being put into use (Isobell et al., 2016). PAR helps to develop and sustain partnerships that last even after the study is finished; it also provides opportunities for participants voices to be heard; and lastly enables the cocreation of knowledge that is responsive to local challenges (Isobell et al., 2016).

Translation of research findings depends on the researcher's ability to bring key stakeholders together into the project and allocating them roles that they can play in solving the problem (Kothari and Armstrong 2011). By following the transdisciplinary approach (Nicolescu 2014), the MABISA study was able to bring together all the key parties, which collectively cater for the welfare of the community (health, social and economic). Each party involved had a role which contributed to solving the schistosomiasis problem. The MABISA project stakeholders were as follows: primary health centres, community caregivers, traditional and administrative leaders, school principals, community advisory board members and community research assistants (Musesengwa, Chimbari et al. 2017). The aim of our study was to measure the level or type of engagement required with different stakeholders involved in the MABISA project in order to achieve the transfer of schistosomiasis research findings in the study area. This article presents the outcomes of the stakeholder

analysis conducted through interviews with key informants. It demonstrates the approaches to be taken in involving these stakeholders in the process of research uptake for the MABISA study.

Methods

Study area

Our study area was Ndumo area, which has a subtropical climate and an average rainfall of 670 - 1000 mm per year (Coetzee, Nell et al. 2015). The schistosomiasis species which is most common in the area is the *Schistosoma haematobium*, caused by the intermediary snail host, *Bulinus globosus* (Kabuyaya 2016). This species is found in almost all the schistosomiasis hotspots identified in Ndumo area by Manyangadze, Chimbari et al. (2016). Ndumo area is comprised of a small town which has limited facilities and infrastructure (Coetzee, Nell et al. 2015). There are two clinics namely Ndumo clinic in ward 16 and Mbandleni clinic in ward 17. There is one library serving the two wards. Schools include 12 primary schools located in the two wards, but for this study only 10 were selected. The area is serviced by one main hospital Mosvold, located in the district's administrative town.

Population

Key Informants for the study were selected purposefully and they constituted of: primary school principals from schools where learners were screened for schistosomiasis infection during the MABISA study; matrons of clinics which supplied equipment and drugs for treating students found with schistosome infections in the schools; librarian where information and internet services are accessed by the community; ward councillors in the areas where the clinics and schools are located; community headmen (induna) who offered permission for MABISA researchers to conduct research activities in their villages and mobilise the community for research feedback meetings; community caregivers from the areas where the study was conducted; community research assistants who worked with the researchers during the screening and data collection; community advisory board members who mobilise the community for research activities and feedback meetings.

Study design

Our study was explanatory and we used the qualitative tools involving structured interviews to determine stakeholder's interest and power to influence the process of research uptake in the community. Our structured interviews assessed the stakeholder's role in the community, the activities they conduct in their institutions or groupings and the information dissemination channels they use to reach out to the general community. We used the responses to determine the appropriate action to take for each stakeholder according to the Stakeholder Analysis Matrix (Morphy 2015).

Consent and ethics

Consent for participating in the study and recording the interviews using a recorder was requested verbally prior to beginning of interviews. Ethical permission was granted by the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee (HSSREC; Protocol reference number HSS/0112/017 M)

Data analysis

For data analysis we transcribed the audio recordings verbatim and coded the data, in order to make themes emerge. This analysis was done using NVivo software. We proceeded to use the emerging themes to conduct a stakeholder analysis. We used the Boston power interest matrix to determine the category to place each stakeholder depending on their power to influence the community and interest in solving the problem. This method revealed the best role for each stakeholder in the uptake of schistosomiasis research findings in the affected area.

Results

The key informants involved in the study, their demographics and the dissemination channels used by their institutions are summarised in Table 1. The table also shows the different classifications we assigned to each stakeholder according to the power interest matrix.

Nurses

Clinic matrons said since the inception of the MABISA project in 2015 schistosomiasis cases had dropped. *Schistosoma haematobium* prevalence rates among school children in the Ndumo area dropped from 37,5% in 2016 to 6% in 2018 after the MABISA project conducted screening and treatment interventions (Kabuyaya, Chimbari et al. 2018). The clinic matrons said they had not sent any messages due to shortage of health education material on schistosomiasis in their clinics and lack of policy led initiatives to sensitize the community residents about the disease.

“Yes, MABISA went into the field and recorded findings about the infection levels in the communities, something that we could not do on our own. They brought back the findings about the infected people and they gave it to us. Now we know how much to anticipate when it comes to schistosomiasis.” (Matron, clinic A)

Nurses were found to have a high influence on the targeted audience and had a high level of interest in schistosomiasis knowledge uptake. Their interest in the disease and influence in the community made the clinic a key stakeholder to partner with in schistosomiasis knowledge uptake. Nurses support uptake of schistosomiasis findings through outreach programs conducted by their school health teams. Nurses also have space for posters which can be used to educate communities when they visit the clinic. Nurses acknowledged that the work done by schistosomiasis researchers in the area filled a gap which they could not fill on their own.

Community Health Workers (CHWs)

The CHWs showed low levels of interest in schistosomiasis knowledge uptake. This was attributed to the fact that the burden of schistosomiasis was lower compared to that of HIV and TB cases. Hence, they had spent more time on patients with these diseases leaving out schistosomiasis treatment and awareness visits. However, they showed high level of power to influence the community since their core business was health promotion and care. CHWs proposed that; it would be good to run schistosomiasis awareness programs during the rainy season when the risk is higher. CHWs are already in partnership with nurses since they directly report to the clinic matron. The partnership between these two groups can enhance dissemination of schistosomiasis related activities including scaling up of the treatment programme.

Traditional leaders

Traditional leaders reported that research activities conducted by schistosomiasis researchers improved awareness of how schistosomiasis is transmitted, prevented and controlled. They were informed about the endemicity of the disease in their areas by the researchers and were now knowledgeable about the disease.

“The recruitment and training of community members to engage and assist in activities conducted by researchers will lead to education of some community members on the disease, since these trained community research assistants will continue to interact with other community members concerning the diseases long after the researchers are gone.” (Village head, KwaMthanti area)

“Few people knew they got this disease, they would only see the symptoms then go to clinics, but they did not know what had infected them.” Village head, Mgedula area)

“We are now aware that we should not stand in stagnant water bodies or go in the water without protective clothing as these stagnant water sources are the breeding areas for diseases such as schistosomiasis.” (Village head, Makhane area)

The traditional leaders showed high power influence in the community and their role in research uptake was considered important. Village headmen however had low interest in the disease because their focus was mostly on administrative duties. Village heads offered to facilitate the uptake of schistosomiasis knowledge/research findings by helping with mobilising people for community meetings. The village headmen also suggested allocating the researchers space to operate a schistosomiasis research station/centre where the community can get assistance on schistosomiasis related problems.

Primary school principals

Primary school principals reported that they had utilised schistosomiasis findings from MABISA to educate students during morning prayers and parents during parent meetings. However, other school principals stated that they had not shared results from the study outside the classroom. Learners who were screened and tested were given information about schistosomiasis. For example, the learners and school teachers involved in the research learnt from the researchers how schistosomiasis is transmitted and how it could be treated. Primary school teachers have high influence on the affected community as well as the children and their interest in schistosomiasis knowledge uptake is also high. They have the power to influence pupils and they are interested in addressing the schistosomiasis problems affecting their pupils through engagement with MABISA researchers and school health teams from the local clinics in the study area

“We were informed that children contract schistosomiasis when playing in infected water.” (Principal, school A)

“We have sent the information about the work done by the researchers to parents and we encouraged them to support this research by making sure their children get treatment. Also, the young kids who were part of the research now know this information and they can share it with others at home.” (Principal, schools F)

Some schools however, had not yet conducted campaigns on schistosomiasis outside the classroom. They stated that, the life skills lessons cater for that as they contain some lessons on schistosomiasis. One of the headmasters said they had not received the findings from the researchers in printed form:

“We are actually still waiting for posters, booklets and pamphlets from the researchers to see what the findings of the research were.” (Principal, school B)

The outcome of this study was followed by efforts to prepare targeted messages and disseminate them properly through the school's channel of information sharing. Typical example would be through development of infographics, audio visual materials and other arts-based media such as song and drama competitions (Mindu, Kabuyaya et al. 2020).

Councillor

The councillor said people in his area had been invited to the project's research appraisal activities where he observed community members actively participating at the events. The councillor also noted that infected children in schools that were part of the research had been treated and that researchers had helped them to get information on how the disease is transmitted.

"Our children have received treatment, CRAs have also been trained on bilharzia screening and snail sampling. With this knowledge, they can continue the dissemination of work done by MABISA within the community." Councillor, ward 17

The councillor has high power to influence the processes of intervention but showed a low interest. He is a good stakeholder to include in translation activities as a participant in programs/campaigns meant to influence behaviour change among different community members and groups in the study area. The councillor is in a better position to mobilise the community and attract funds from government for health promotion events and his partnership with the political leadership can help to make research uptake activities credible and be supported by the relevant people in the government especially those that have the power to make decisions that can lead to a reduction of the burden of the disease.

Library

The library's focus is on helping the community with literary activities, such as reading and learning. Their power to influence schistosomiasis knowledge uptake is rated low because they prioritise creating a book reading culture and improving literacy. However, they can be engaged as stakeholders typically for providing access to information on schistosomiasis to those visiting the library or for conducting trainings at their venue for few key members of the community who can be residents or health workers. The library offers limited space and resources (internet, reading facilities and workshop rooms) for the community in the study area to connect and interact with others outside their area. The library can accommodate children from different schools and supply books and internet resources to the children so that they can learn more about the disease. Hence, they play a useful role pushing the findings to the community.

Discussion

Engaging stakeholders is effective for ensuring that research is relevant to end users (Kothari and Armstrong 2011). Researchers need to demonstrate how stakeholder interests are being served by working towards a common goal (Franche, Baril et al. 2005). Research translation can be possible in the community if the right stakeholders are involved. Our approach in this regard was to engage key stakeholders within the community's system who are affected by the schistosomiasis problem or can affect the outcomes of solving the problem. These stakeholders include health workers, learning institutions and traditional/community leaders. The MABISA project generated various sets of knowledge which can be directed towards these different stakeholders in the study area. Tailored approaches for each of the stakeholders are necessary for translation of research findings.

Each stakeholder has a speciality and role in the community which is unique. Hence their involvement in the translation of research findings should be in relation to what they do in the community. The stakeholders need to be capacitated to disseminate and encourage uptake of research findings. The first area for capacity building would be in the diagnosis and treatment of the disease which should be directed towards the nurses and community caregivers. The second area of capacity is behaviour change education which should be directed towards community leaders, schoolteachers and the librarian. As for the schools and libraries, capacity is required in terms of developing learning resources that will be distributed to the school children. Audio visuals with information on the transmission and prevention of the disease should also be produced and distributed to the schools and libraries with computers.

Libraries and schools can be given information on schistosomiasis transmission, symptoms, risk factors treatment, control and sanitation. Their connection to the community offers a stable channel for schistosomiasis research translation since the schoolteachers and librarian have expert power, they are considered to be educated and hence wield the power to shape what others consider as factual or legitimate knowledge (Moon 2019). School teachers are in direct contact with the children in the classroom and even outside. School teachers are also in contact with parents of the children that attend classes in the school. The library platform can also be adopted for educating school students and community health workers using digital technology to improve the uptake of research findings. The concept of e-health, i.e. use of ICT to educate the community, has emerged as a cost effective and secure method for the support of health-related education and knowledge uptake (WHA 2005). For developing countries where internet technology is still starting to infiltrate, the innovation of electronic learning may contribute to more awareness being achieved (van Zyl, Visser et al. 2014).

Health workers wield an important position in the translation of schistosomiasis research findings. They are at the fore front of dealing with the health of the community and they are considered to have expert power since they possess knowledge and skills which are useful to others (Manojlovich 2007). The nurses and community caregivers in the study area presently work in partnership to conduct diagnosis and treatment of many diseases during home visits, field visit day, and community gatherings. There is need to build up on this system and provide community caregivers with training on schistosomiasis diagnosis methods, treatment, and support for infected community members. The health workers through the support of government should do screening and deworming exercises. The MABISA study has provided some recommendations as well as guidelines on how to diagnose, how to treat and when during the year to conduct the mass deworming exercises (Kabuyaya, Chimbari et al. 2017). According to (Ross et al., 2017) a holistic health system approach is required for sustainable control of schistosomiasis, this points to the need to have an integrated control strategy for schistosomiasis which fits within the present rural health management system. A study by (Inobaya et al., 2018) also supports the involvement of community health workers in increasing schistosomiasis mass drug treatment coverage and highlights the importance of giving them disease specific training. Traditional leaders and councillors have structural power which allows them to shape and influence the thinking or actions of others in the community (Moon 2019). In the study area they also have access to many information sharing platforms that are available in the community such as the community meetings, community notice boards and halls, leadership events, and many other types of gatherings. Headmen and councillors should be given information on the disease, how to seek treatment, symptoms, hot spots and types of snails. They can use this information to strengthen the community's defence against the disease. Reports for the headmen and councillor to understand the project should stick out, be distributed.

Conclusion

The study concluded that, stakeholders should be engaged in the translation of research findings through appropriate approaches which are tailored to the roles they play in the community. The study identified opportunities for translation of MABISA project research findings through partnership with community stakeholders involved in community health, learning and leadership within the Ingwavuma area. These stakeholders can play important roles in the translation of research findings due to the powers they wield to influence the community. Tailored messages and capacity building for each stakeholder is required to achieve this. Further studies are required to develop the tools and strategies that can be used for building capacity for the various stakeholders to participate in the control of schistosomiasis.

List Of Abbreviations

MABISA - Malaria and Bilharzia in Southern Africa

CHWs - Community health worker

CRA - Community research assistant

KT - Knowledge translation

Declarations

Ethics approval and consent

Consent for participation and recording audio was requested verbally. Ethical permission was granted by the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee (HSSREC; Protocol reference number HSS/0112/017 M). Gate keeper permission was granted by the local traditional leadership and district administration.

Consent for publication

NA

Availability of data and materials

The data generated from this study is not publicly available to view, due to ethical considerations. However, the author has stored the data in the institutional office where the project supervisor seats in office. Copies of this data can be accessed through the author on request via email.

Competing interests

The authors declare that they have no competing interests.

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Authors contribution

Mindu and Chimbari conceptualised the paper. Mindu gathered the data and wrote the first draft of the manuscript and did the analysis of the data. Musesengwa read the first draft of the manuscript and critically analysed the results. Chimbari read the final draft after the incorporation of Musesengwa comments and did the final revisions and created the final flow of ideas within the manuscript. All authors read and approved the final manuscript.

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Table

Table 1.

Summary of stakeholder analysis and approaches suitable for each stakeholder in translation of research findings.

Stakeholder	No of respondents and sex	Role	Communication channels used	Interest in project	Power to influence	Strategy
Nurses	2 female	Health education, treatment and management of diseases	Health campaigns, School health teams, Posters, brochures, fliers	High	High	Partnership
Principals/teachers	10 (4m/6f)	Primary education, wellbeing of children	Letters, SMS, Posters, Classroom learning, Health awareness campaigns.	High	High	Partnership
Traditional leaders	4 male	Community mobilisation, resolving disputes, traditional authority.	Imbizo (community meetings)	Low	High	Participation
Community caregivers	1 male	Community engagement	Home visits, Health campaigns – community meetings	High	High	Partnership
Librarian	1 female	Books, internet, printing Information communication	Books, Internet, Workshops and seminars.	Low	Low	Push communications
Councillor.	1 male	Community mobilisation, political administration.	Community gatherings	Low	High	Consultation

Supplementary Files

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- [Roleofstakeholdersinschistoresearchuptakechecklist.docx](#)