

Factors influencing uptake of schistosomiasis research findings in Ingwavuma area, uMkhanyakude District, Kwazulu-Natal, South Africa

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Abstract

Background: Research uptake is concerned with spreading ideas across multiple levels of the community. Barriers such as poverty, lack of infrastructure, illiteracy and culture prevent information sharing in arid rural areas of sub-Saharan Africa.

Objective: This study explores the factors influencing schistosomiasis research uptake and the available channels for the uptake of research findings from a transdisciplinary and eco-health research project on schistosomiasis in Ingwavuma area, uMkhanyakude district, KwaZulu-Natal province in South Africa.

Methods: This case study conducted in 2017 involved 78 primary school children and 73 heads of household recruited through convenience and purposive sampling. Data were collected through focus group discussions, then transcribed and analysed by the researcher using thematic analysis.

Results: Factors such as poor knowledge, water and sanitation problems, and lack of sufficient health workers hindered the uptake of schistosomiasis research findings. Participants recommended several platforms to share schistosomiasis research findings with the community, including: door to door visits; social gatherings such as sports events, talent shows, and religious gatherings; mass media platforms such as radio and television; social media platforms such as WhatsApp, Facebook and Twitter; and printed media such as posters, booklets and pamphlets.

Conclusions: There is a need to train health workers and peer educators in this area of South Africa to educate people about schistosomiasis infection, screening and treatment through home visits or social events. Schistosomiasis research findings must be synthesised and packaged in different forms for dissemination via multimedia media-based communication channels.

Introduction

Schistosomiasis is a chronic and debilitating disease, second only to malaria in terms of parasite induced human morbidity and mortality.¹ Schistosomiasis is also known as snail fever. It is 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. Geographical distribution of the diseases among human beings is dependent on environmental factors, hygiene, nutrition, and the characteristics of the host snail.² 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.^{3,4}

Research uptake is the activity used to facilitate and contribute to the use of evidence generated through research by stakeholders and the general population.⁵ Research uptake is concerned with spreading ideas across multiple levels of the community, which may include groups at the organizational and community levels affected by the problem.⁶ It stems from the need to push, pull and exchange research findings.^{7,8} Awareness of the key elements that increase research uptake helps to shape interventions that increase knowledge about the problems that affect the community, avoiding misunderstandings and ignorance.⁹ Knowledge uptake theories assume that communication is a process of engagement to achieve behaviour change and not merely a collection of products to distribute.¹⁰

Health education in most African countries has centred on health instruction, which is a one-directional technical instrument, based on moralistic content, meant to make individuals comply with interventions.¹¹ Moreover, literacy levels are low in rural areas and the populations there are primarily listeners and speakers rather than readers and writers. This suggests that use of knowledge uptake channels that can be incorporated into indigenous knowledge-sharing platforms in the community, as well as media platforms accessed by the community. Moreover, the channels of information communication that are currently used by various research uptake agents to disseminate information to rural dwellers are elitist and urban-centred.¹²

The evidence of various developmental programmes is not reflected in the quality of lives of rural people despite the many programmes claiming to improve the lives

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of rural dwellers; there is lack of successful transfer of developmental information to rural areas.¹² Clinical and health services research is continually producing new findings that may contribute to effective and efficient patient care but, a consistent finding is that the transfer of research findings into practice is unpredictable and can be a slow and haphazard process.¹³ Change generally requires comprehensive approaches at different levels tailored to specific settings and target groups.¹⁴

Barriers such as poverty, lack of infrastructure, illiteracy and culture prevent information sharing in arid rural areas of sub-Saharan Africa.¹⁵ Capacity building is required to enable villagers to gain access to information and support services.¹⁶ Most rural people rely on folk media channels such as storytelling, puppetry, proverbs, visual art, songs, dancing, drama, role-play, dirges, concerts, gong beating, drumming, etc. to transmit messages and promote behaviour change.¹⁷ Other studies also reveal that a combination of home visits, multimedia platforms and social gatherings would be effective for disseminating health information. Health communication should be based on the social, cultural, political and economic forces that structure reality so that people will be encouraged to take action against those forces.¹⁸

In this article we look at barriers and opportunities for the uptake of schistosomiasis knowledge by rural communities in an eco-health research project called MABISA (Malaria and Bilharzia in Southern Africa). We explore opportunities for research uptake in the Ingwavuma community, where the MABISA research project conducted schistosomiasis research.¹⁹ The process of uptake of research findings needs to be negotiated with users. Before the adoption/uptake of practices. Many of the practices and systems in use among communities are deeply rooted into community systems and are, often, cost effective, thereby making it hard for users to eliminate or abandon easily. In some instances, users may need to see the cost benefit of changing their practices or they may want to understand the relevance of implementing the change process within their local settings.

Implementation science is the term used to refer to studies which ensure that findings from research are implemented into the organisations and societies which can benefit from them. Implementation science is defined as the study of methods and strategies which can be used for the uptake of research findings by organisations and various population groups to improve health and practice.¹³ Conceptual models of implementation include theories that guide or

explain the way change occurs in individuals and in groups.²⁰ Examples of the implementation models include Rogers diffusion theory, Kahn's conceptualisation of science revolutions and Loma's coordinated implementation model, Knowledge to Action framework (KTA), CIHR model of knowledge translation and lastly, the KTA framework used as a research uptake guide by DFID-funded research programs.⁵ In this study we followed the research uptake guide by DFID-funded research programs. The DFID guide provides a framework that is easy to follow for research projects that develop products, technologies or processes; or research to understand the world around us, what works and why. The DFID approach to research uptake delineates the activity to four strands: stakeholder engagement, capacity building, communication and monitoring and evaluation.

Stakeholder engagement involves stakeholder mapping to identify who the relevant stakeholders are likely to be. Stakeholders in this case would include policy makers, civil service organisations, the private sector and other researchers. They may be aware of the problem or not aware, but generally they should have an interest in the findings of the study. Stakeholders may be the users of the research or they may be those that help in implementing the uptake of the research. Capacity building is the next step in the DFID research uptake approach. Capacity building has to do with assessing the "knowledge, skills and attitudes needed to access use, create and communicate research findings".⁵ Identifying the gaps where there is need for capacity building is essential for the success of the research uptake initiative. Capacity building often means there is need for trainings or organisational development to change the culture or system of doing things.

Communication is the other essential component in the DFID research uptake guide. The role of communication lies in the need for sharing results in the context of the body of research evidence. This may involve the synthesis of results and packaging them into dissemination units. Synthesised research findings are necessary to helping decision makers to use research evidence in making their decisions. The communication can also extend to the entire community to ensure that everyone is familiar with the research work and the results. Monitoring and evaluation is the final step in the research uptake guide, this part of the research uptake approach is very essential because it enables the evaluation of the entire research uptake project. It allows the use of measures and indicators of research uptake. Research evidence should be made

available to the research community and this is measured by the amount of people reached and influenced.

Knowledge uptake engages many players and ultimately produces results which are intended to build community capacities to deal with problems that affect their well-being.⁷ Knowledge uptake is useful in health promotion and according to Speller *et al*, it must influence systems and structures as well as individuals to support change from behaviour that leads to continued infection.²¹ MABISA research project conducted research in uMkhanyakude, to determine the prevalence of schistosomiasis in the area. The project concluded that there is a high incidence and prevalence of schistosomiasis in the study area.

MABISA project findings also indicated that 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 were significant risk factors for contracting schistosomiasis.²² Elsewhere in Africa, it was discovered that, inadequate knowledge, poor attitudes and practices (KAP) on causative factors were some of the critical factors which contributed to increased prevalence of schistosomiasis infections.²³ Thus, dissemination of schistosomiasis research findings to affected communities is necessary to reduce the burden of schistosomiasis.

The MABISA project utilized Community Research Assistants (CRAs) and Community Advisory Boards (CABs) for community engagements with the Ingwavuma communities. The CRAs and CABs, worked with researchers and got in-house training on schistosomiasis. They are now knowledgeable about the disease, its implications and the way it gets transmitted. But the larger community still lacked full knowledge about the disease. Participatory Rural Appraisal (PRA) sessions were conducted to inform the whole Ingwavuma community about the disease; the activities included music and performance to disseminate the messages from the research. The first PRA activity in 2015 was aimed at informing the community about the study and the second 2017 was aimed at disseminating findings from the study.

While these research translation efforts were carried out to raise awareness about schistosomiasis, there are still schistosomiasis re-infections suggesting that the knowledge imparted to the community during these events has not penetrated enough and interrupted transmission of the disease in the area. Thus, this study sought to find more effective ways of promoting schisto-

somiasis knowledge uptake to reduce schistosomiasis infections in the study area.

Materials and Methods

Ethical considerations

Ethical clearance for the study was obtained from the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics Committee (HSSREC; Protocol reference number HSS/0112/017M). Consent for the household head FGDs was given by signing of consent forms before the FGDs could start. The pupils were given consent forms which they had to present to their parents and ask them to sign if they agreed to let them enter the FGDs. After that we asked the children to sign assent forms for agreeing to participate in the FGDs. No names of participants were used in the audio recording of the FGDs. All voice recordings were transcribed using coded names and numbers to represent participants.

Study design and setting

This case study was designed to identify the practices and platforms that can hinder and improve the uptake of schistosomiasis research. The study was conducted in Ingwavuma area, a rural location which is under Jozini municipality, uMkhanyakude district in KwaZulu-Natal Province, South Africa. Data were collected between 27 and 30 May 2017 from schools and villages in the study area.

Sampling and recruitment

Four schools in the area were selected purposively from ten schools that were screened and treated by MABISA research project. Purposive sampling was used to recruit schistosomiasis screened and treated participants who understood the context of schistosomiasis research. Household heads were conveniently recruited from five villages with high schistosomiasis prevalence. Invitations to participate in the FGDs were given during community gatherings by village headmen and through random selection of household heads and youths by the community research assistants, see Table 1 and Table 2 for the exact number of participants by age group and gender distribution in the FGDs.

Data collection and analysis

The FGDs were recorded using an audio recorder which was held by an assistant. Consent for audio recording was requested verbally. The recordings were transferred to a computer for transcribing.

The findings were written down in English following the way the discussions ensured. After transcribing, the findings were analysed using thematic analysis on NVivo analysis software (version 11, QSR International Pty. Ltd, Melbourne, Australia).

The coded data were presented in the thematic writing, giving a description of experiences, activities and methods encountered by respondent in the group in relation to schistosomiasis knowledge uptake.

Results

A total of 151 people were interviewed through FGDs conducted with community members in the five villages and four schools that were part of the study area. See Table 1 and Table 2 for the distribution of the sex, age groups and areas covered.

Factors that hinder the uptake of schistosomiasis research findings

Poor knowledge of schistosomiasis

Household heads demonstrated knowledge about the disease. They stated that their area was prone to schistosomiasis due to poverty and because children were fond

of playing in the dirty water where they often got infected. Young children however had less knowledge of the causes of schistosomiasis, with most of them associating the disease with eating too much salt.

"We have this problem because we live in these poor conditions, and we never get treatment for these diseases. Our children still go to these water points and they too risk getting infected" Respondent 1, KwaMthanti village

Poor sanitation and access to water

Adult participants also stated that issues such as lack of water for drinking and the current dry spell exacerbated the problem of schistosomiasis knowledge uptake. Despite knowledge about the dangers people would still get in the water when the rain came and collected in the rivers and puddles. Household heads get in the water to do laundry and little children came to the water to swim. The type of lifestyle that the people were exposed to in some parts of the area resulted in failure to curb the schistosomiasis problem.

Shortage of health workers

Another problem that the participants noted was the shortage of dedicated community health workers who could conduct

Table 1. Number of household heads engaged in Focus Group Discussions in Ingwavuma area of Kwa-Zulu Natal province, South Africa, May 2017.

Village	Ward	Sex	Number
Mgedula	16	Adult males	12
KwaMthanti	15	Adult women	12
Mkhayeni	16	Young adult mixed	12 (7f/5m)
Mkhayeni	16	Adult women	8
Makhane	16	Adult men	9
Makhane	16	Adult women	10
Madeya	16	Adult mixed sex group	10 (4 f/6m)
Total			73

Table 2. Primary school children engaged in Focus Group Discussions at Ingwavuma area of Kwa-Zulu Natal province, South Africa, May 2017.

School	Ward	Sex	Number
Makhane primary	16	Boys	11
		Girl	10
Maphindela primary	15	Boys	10
		Girls	10
Ziphosheni primary	15	Boys	10
		Girls	10
Munywana primary	16	Boys	10
		Girls	7
Total			78

home visits to educate the community about the disease.

"We share one health worker with two other villages, unfortunately this one health worker cannot manage to educate all of us, she can only come when there is an illness." Respondent 8, Mkhayeni village

Participants raised concern that there were few programs or events which were aimed at educating the people about health. The community has few community health workers dedicated for educating household heads and school children about diseases especially schistosomiasis.

Platforms that can improve uptake of schistosomiasis research findings

Use of shared social spaces for targeted health communication of schistosomiasis research

Heads of household suggested recruitment of community-based people to be trained and sent to do home visits on days when the whole village is free such as public holidays and weekends when the villagers spend time at home.

"Educators should go to the wards, section by section, and call people from the villages and ask them to gather around and teach them." Respondent 10, KwaMthanti village

School children suggested that educators can visit young people during social events such as sports activities, talent shows and parties, where they gather in large numbers. They advised the researchers to approach event managers to arrange how the messages could be shared during these entertainment events.

"We have sporting activities that occur during weekends. There are associations which run the football tournaments which can be approached." Respondent 8, Makhane Primary school.

Another suggestion for meeting people in large numbers was visiting people in the churches and educating them there. Participants stated that other villagers still conduct religious practices such as baptism and cleansing ceremonies in the rivers. They suggested that these could still need education through their leaders about the risks.

"I think by visiting the churches you can meet young people during the Sunday school services and educate them."

Respondent 6, Maphindela primary school.
"These people who do rituals in the rivers still need education about the risks of such rituals. Educating the church members and their leaders who conduct the rituals in schistosomiasis infected rivers can help improve their behaviours towards water contact." Respondent 5, Ziphosheni primary school

More opportunities for having forums meant for health education are needed in the Ingwavuma area. Participants recommended using community leaders to mobilise the people together to listen to researchers and educators about the disease.

Use of media communication platforms for schistosomiasis research uptake

Respondents recommended radio communication channels and said radio could work especially, if someone from the community could go to the radio and conduct campaigns about the disease.

"There is a community radio here, if they can announce at schools that on such a date there will be doing a program on this disease they can get to reach out to quite many people." Respondent 4, Makhane village

"People may listen to radio programmes especially if they know the time slots for the programmes on health on the radio." Respondent 8, Makhane village

Television messages were also recommended by villagers who live in areas where there is full access to electricity. They stated that they use the television mostly for their entertainment and information needs. It was also suggested that since some villagers have no TV there could be a way of bringing them to watch a video or bioscope on schistosomiasis knowledge in a central point in the village (shared social spaces).

"We do watch the television and we can be happy to see lessons for our areas appearing on TV" Respondent 3, Mgedula village

"You can make a video which is educative about bilharzia and call the community together to come and watch this video and learn for themselves" Respondent 2, Madeya village

Use of social media platforms

Social media channels were suggested by youths. They said using social media, they can have a group that shares and

uploads information on schistosomiasis, this group can be administered by the local youths and feature numerous groups of youths from around the area. The participants stated that many young people in the area have cellular-phones.

"The youth love this thing (social media). We do use the accounts, Facebook, and WhatsApp. So, it can be fun to have those used to spread the message." Respondent 1, Makhane village

"Using twitter and Instagram to post pictures can make health messages reach out to young audiences." Respondent 4, Mkhayeni village

Use of printed reading material

Printed display media channels were also identified by the villagers as being quite effective in communicating research findings to rural areas. Respondents said they would appreciate the use of billboards but emphasized that not everyone can read.

"The use of pictures on posters is also important because people learn better if you show them pictures." Respondent 6, Mgedula village

Other villagers supported the idea of posters, but they raised the problem of people tearing them down and some not being able to read.

"Some will just see the pictures but not understand the message written because they cannot read" Respondent 2, Madeya village

Hence villagers suggested using billboards especially after prior education about schistosomiasis. Participants suggested putting these on the river sites, on the roads, at the shops, schools and clinics.

Discussion

Uptake of schistosomiasis research findings by affected communities is necessary to reduce the burden of schistosomiasis. Research uptake is about making sure knowledge is contributing to positive developmental agendas and bringing about change among the targeted populations. Research uptake or knowledge uptake follows the principle of ensuring that research findings or new knowledge becomes adopted or implemented in the settings in which it is tested and proven to make significant changes. The process involves change in

settings, practice, systems and processes.

The key action in knowledge uptake is change from old to new, this change may be based on evidence or innovation. In evidence-based change, we gather evidence that a certain method is not effective and that another method can work better. In an innovation-based change, we follow the principle that advancement in program management, or systems upgrades, and new designs ought to replace old methods of solving problems. The real work in KU is not just in identifying the evidence or innovation, the work is in going about the process of establishing the means to usher in these changes.

Poor living conditions in the area and lack of schistosomiasis health education led to behaviour that increased the risk of contracting schistosomiasis in the infested rivers. Through our consultation with the affected community we concluded that, more health education interventions were required to ensure that the affected community is taught about the disease. Schistosomiasis research findings from MABISA project need to be synthesised and packaged in different forms (e.g. infographics and audio visuals) for dissemination via multimedia media-based communication channels.

Multimedia health education is effective for improving the knowledge and perception of individuals.²⁴ It is also good to note that local municipalities in South Africa are helping many rural communities to access broadband wireless networks for social communication, learning and business activities.²⁵ Mass dissemination of info-graphics also has an impact to the end user audience, graphic design and layout can have an astounding impact on how effectively information is understood, improving its accessibility and communicability.⁹

There is also a need to train health workers in the area to educate people about schistosomiasis infection, screening and treatment through home visits or social events conducted in shared social spaces (e.g. sport events, talent shows, drama, poetry etc). This can be achieved by developing evidence summaries and guidelines to support health care facilities and community members.²⁶ Communication intervention impacts among the rural communities can also be achievable by using simpler methods such as community gatherings.²⁷

Limitations

Not all the children fully participated in the focus group discussions with young children. We improved their participation by using a female researcher who could speak to them in an entertaining manner.

Language was also a challenge as the participants could not comprehend some of the scientific terms used. We employed the services of community research assistants to help us break the language barrier during the FGDs. The data from the FGDs represents the Ingwavuma area and may not necessarily apply to other areas in South Africa.

Conclusions

From this study we were able to identify areas of capacity building such as training of health workers and peer educators to assist in the implementation of schistosomiasis health education programs. We also identified available channels for mobilising affected people for treatment and disseminating schistosomiasis health messages. The most common channels mentioned were door-to-door visits, peer education, mass media, social media, and social gatherings within the community. These platforms, if effectively used, could enable the Ingwavuma community to know the symptoms of schistosomiasis, identify the sources of schistosomiasis infection in their areas and prevent more transmission of the disease.

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