Student-led malaria projects - can they be effective?

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Introduction

In this article we give an account of establishing a sustainable project in Uganda. We describe our experiences, both positive and negative, and discuss how such endeavours are beneficial to both students and universities. The substantial work contributed by an increasing group of students at our university and around Australia demonstrates an increasing push towards a greater national contribution to global health. Undoubtedly, student bodies have the potential to become major players in global health initiatives, but first we must see increased financial and academic investment by universities in this particular area of medicine.

Background

There are an estimated three billion people at risk of infection from malaria, with an estimated one million deaths annually. The greatest burden of malaria exists in Sub-Saharan Africa. [1,2] Amongst the Ugandan population of 26.9 million, malaria is the leading cause of morbidity and mortality, with 8 to 13 million episodes reported. [3] The World Malaria Report estimated that there were 43 490 malaria-related deaths in Uganda in 2008, ranking it third in the world behind Nigeria and the Democratic Republic of Congo. [4] In 2011, the situation remained alarming, with 90% of the population living in areas of high malaria transmission. [5]

The focus of this report is the Biharwe region of south-west Uganda. Due to a lack of reliable epidemiological data regarding the south-west of Uganda, it is difficult to evaluate the effectiveness of current malaria intervention strategies. However, Uganda is a country with relatively stable political and economic factors, [6] making it a strong candidate for the creation of sustainable intervention programs.

Insecticide Treated Nets (ITN)

Insecticide treated nets are a core method of malaria prevention and reduce disease-related mortality. [5] The World Health Organisation (WHO) Global Malaria Programme report states that an insecticide-treated net is a mosquito net that repels, disables and/or kills mosquitoes that come into contact with the insecticide. There are two categories of ITNs: conventionally treated nets, and long-lasting insecticidal nets (LLINs). The WHO recommends the distribution of LLINs rather than conventionally treated nets as LLINs are designed to maintain their biological efficacy against vector mosquitoes for at least three years in the field under recommended conditions of use, removing the need for regular insecticide treatment. [7]

Long-lasting insecticide nets have been reported to reduce all-cause child mortality by an average of eighteen percent in Sub-Saharan Africa (with a range of 14-29%). This implies that 5.5 lives could be saved per 1000 children under five years of age per year. [8] Use of LLINs in Africa increased mean birth weight by 55 g, reduced low birth weight by 23%, and reduced miscarriages/stillbirths by 33% in the first few pregnancies when compared with a control arm in which there were no mosquito nets. [9]

Use of LLINs is one of the most cost-effective interventions against malaria. In high-transmission areas where most of the malaria burden occurs in children under the age of five years, the use of LLINs is four to five times cheaper than the alternate strategy of indoor residual spraying. [10] Systematic delivery of LLINs through distribution projects can be a cost-effective way to make a significant impact on a local community. This makes the distribution of LLINs an ideal project for student-led groups with limited budgets.

Our experience implementing a sustainable intervention project in Uganda

This article comments on student-led research performed in Biharwe, which aimed to evaluate the Biharwe community's current knowledge of malaria prevention techniques; to assess how people used their ITNs and to investigate from where they sourced their ITNs. We also aimed to alleviate the high malaria burden in Biharwe through the distribution of ITNs. We fundraised in Tasmania, with financial support being garnered from local Rotarian groups and student societies. Approximately five thousand dollars was raised which we used to purchase ITNs. Simultaneously we began contacting a local non-governmental organisation (NGO) and a student body from Mbarara University, the largest university in south-west Uganda. We felt we had laid the foundation for a successful overseas trip.

Our endeavours suffered initial setbacks due to the observation of a local organisation we were working with misusing the funds of other projects. We felt that in order to avoid a similar fate we would need to cut ties, and decided to seek out other local groups. We made contact with the Mbarara University students and they pointed us towards the Biharwe sub-county as a region of particular neglect with regards to previous government and NGO ITN distribution programs. At their recommendation we travelled to villages in the area. Access to these villages was obtained through respectfully approaching the village representatives and their councils, and asking their permission to engage with the local community.

Despite all our preparations before heading to Uganda, we were still not fully prepared for the stark realities of everyday life in East Africa. One problem we encountered was the misuse and misunderstanding of the ITN distribution program by locals. We also encountered local 'gangs' who would collect free ITNs from our distribution programs and then sell them at the market place for a profit; people who used their ITNs as materials to build their chicken coups; and widespread myths about the effects of ITNs. To combat this we sought the advice of a local priest who requested that the village heads put together a list of households as a means of minimising the fraudulent distribution of our nets. While not ideal, this approach did give us greater confidence when distributing the ITNs. As Uganda is a religious nation the support of a well-respected local priest made local leaders more receptive to our program.

It became apparent that we had to strengthen our understanding of local attitudes towards and usage of ITNs if we were to create a long-term, meaningful relationship with people in the area. At the suggestion of Mbarara University students, we commissioned DEKA Consult Limited, a local research group, to conduct qualitative epidemiological research in villages in these communities. Data collected was useful in identifying the scope of the problem. It identified that community members already had a significant amount of knowledge on the use of ITNs and that those who owned mosquito nets had purchased them from local suppliers. Local ethics approval and permission for access to local community members was gained by DEKA Consult Limited.

Evaluating local knowledge on malaria prevention

The study commissioned addressed community attitudes towards malaria prevention by surveying two distinct groups living in the Biharwe sub-county of south-west Uganda. Through questionnaires and focus group discussions, local researchers gathered information concerning attitudes towards and usage of mosquito nets in the area. One of the key findings was that ITNs were nominated as the main preventative technique by the respondents (33.3%). This is congruent with previous data indicating an increase in awareness of ITNs in Uganda following the Roll Back Malaria Abuja Summit. [11] A majority of respondents indicated some knowledge of the appropriate use of these mosquito nets (83.3%), meaning though that one in six of the Biharwe community members were unsure of how to correctly use ITNs. The research also explored common reasons why people neglected to sleep under ITNs in the Biharwe sub-county. Common misperceptions such as ITNs causing impotence and leading to burns were identified as barriers to people using their mosquito nets, and were issues that would need to be addressed in future education seminars. The findings indicate that assessment of existing knowledge and perceptions of a community are crucial in identifying obstacles that must be overcome during the implementation of an effective intervention project. Activities promoting education can then be moulded around the particular culture and social dynamic of a community, which will lead to maximal project impact. [12, 13] We believe this data indicates that the distribution of ITNs would be improved if it was accompanied by robust educational initiates that are tailored to local community needs.

Our way forward

In the summer of 2011-2012 another group of students from UTAS implemented an LLIN distribution project in the south-west of Uganda. They furthered the work outlined in this report. Our experiences and connections provided an excellent foundation for them to implement expanded projects. A further group of UTAS students has been assembled and is planning to travel to Uganda this coming summer, once again with the aim of building on the previous two visits. With the generous assistance of the Menzies Institute and UTAS School of Medicine, plans for a more robust epidemiology project have been formulated in order to measure the efficacy of future projects in Uganda. We believe the sustainability and effectiveness of these programs relies on both the development of a long-term relationship between our student organisation and the local community, as well as appropriate evaluation of all our projects.

Free distribution or subsidised LLINs

The majority of the malaria burden exists in the poorest, most rural communities, yet it is these regions that are often neglected in widespread ITN distribution programs. [14]

Our data indicates that only a minority of the households in the rural Biharwe sub-county own ITNs (11.1%), and that all of these ITNs have been purchased through the commercial sector. Again methodological disparities need to be addressed in order to confirm the validity of these results. However it does raise the important question of whether the commercial sector, rather than the public/non-governmental organisation (NGO) sector, would be better placed to serve their local communities.

Our dilemma serves as a microcosm for a much larger debate that has been occurring over the last decade regarding the most effective means of delivering ITNs in order to achieve the greatest national coverage.[15] Free distribution of ITNs is far more equitable and effective at reaching the poor. [16] However, utilisation of the commercial sector through subsidies, vouchers or a stratification model [17] is more sustainable, because a portion of the losses may be recovered. Populations, including those in the rural Biharwe sub-region, that have been neglected from ITN schemes such as Roll Back Malaria, [5] may stand to benefit from free targeted distribution of nets. Collaborations with both local and international students are well placed to combine local knowledge and financial support to best implement such initiatives.

The role of students in malaria prevention and international development projects

Organisations such as the World Health Organisation, when involved in widespread ITN distribution, [5] have far greater capabilities than any student-led project. However, due to shortfalls in funding and co-ordination, these schemes will not be able to reach all at-risk populations, particularly the poorest rural areas. [5] Small scale and independently funded student-led projects can fill a void in this neglected population. In order to achieve the maximal impact with a malaria intervention project, students should identify areas with a low rate of household ITN ownership, as well as areas with a low percentage of the owned ITNs being donated. It is these areas that ultimately stand to make the greatest progress in terms of ITN coverage amongst vulnerable individuals, resulting in a decrease in morbidity and mortality from malaria. [18] With locally-specific research, strong relationships with the community and the community leaders, and appropriate evaluation processes in place, students can make the maximal impact on reducing morbidity and mortality from malaria with limited funds. [19]

The aim should always be for a long-term partnership between the community [19] and student-led organisations who are willing to promote sustainability. This has the greatest opportunity to provide long-term benefits for both parties. Our experience is that medical students provide a continuous stream of like-minded youth who have been able to rise to the challenge and continue the work of previous students. Through bilateral exchanges between students and overseas partners, trust and friendship are able to be fostered, which further encourages participation in the project upon returning. Important information regarding the social hierarchy is also gained, which greatly helps with gaining access to the local decision makers. In turn, this creates greater understanding of the health problems, culture and reasons why particular communities have been left behind. Student-led organisations are perfectly placed to deliver these educational programs, as they constitute a long-term pool of motivated, altruistic skilled workers who are able to learn from their predecessors. Individual students also stand to benefit through increased cultural understanding, application of learned skill sets and an opportunity which can enhance their career paths. [19] Through appropriate

long-term trial, error and proper evaluation, systems of program implementation can be formulated which may then be applied to similar communities elsewhere.

The Role of Universities

Preparing students for a leadership role in global health and its related fields is critical. University curricula should reflect today's problems and those that are likely to be present in the coming decades. [20] It is our opinion that students are increasingly becoming aware and more willing to be involved in providing solutions, no matter how small, to current international issues, thanks mainly to a surge in the exposure to social media. When universities do not explore such issues deeply in their curricula, and do not provide the support for active student involvement, it may lead students to perceive that universities are about something other than the realities of the world. [21] Encouraging participation in international health projects has been reported to encourage students to better examine cross cultural issues, to improve their problem solving skills and to help improve the delivery of healthcare for under-privileged people. [22] These are transferable skills that are vital in the Australian health care system.

North American and European universities continue to lead the way; however, Australian universities are starting to become more involved with global health issues. The Australian Medical Students Association's Global Health Committee aims to link and empower groups of students from each Australian medical school. [23] The Melbourne University Health Initiative, which oversees the Victorian Student's Aid Program, aims to help students make a difference in health issues on a local and international level by running events on campus to promote awareness about several health issues, and by organising public health lectures to promote awareness in the community. [24] The Training for Health Equity Network (THEnet) is a composition of ten schools from around the world, including James Cook and Flinders Universities, who have committed to ensure that teaching, research and service activities address priority health needs, using a focus on underserved communities. [25] A focus of THEnet is on social accountability, with a framework to assess whether the schools are contributing to the improvement of health conditions within their local communities. [26]

In our view, there is no doubt that there needs to be more penetration of such initiatives into each of the universities' curriculum. Should this occur, Australia may be able to produce a generation of graduates who will be well placed to address the numerous complex global health issues we are facing today, and that we will inevitably face in the future.

Conflict of interest

None declared.

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