Gateways: International Journal of Community Research and Engagement

Vol 10 (2017)

Inculcating Health Awareness in Karachi, Pakistan

How innovative, socially acceptable methods can help combat communicable diseases of poverty

Maryam Huda
Unaib Rabbani
Fauziah Rabbani
Aga Khan University

Citation: Huda, M, Rabbani, U & Rabbani, F 2017, 'Inculcating health awareness in Karachi, Pakistan: How innovative, socially acceptable methods can help combat communicable diseases of poverty', *Gateways: International Journal of Community Research and Engagement*, vol. 10, pp. 78–96. doi: 10.5130/ijcre.v10i0.5481

Corresponding author:
Maryam Huda
maryam.huda@aku.edu

DOI: http://dx.doi.org/10.5130/ijcre.v10i0.5481

ISSN 1836-3393
Published by UTS ePRESS
http://epress.lib.uts.edu.au/journals/index.php/ijcre/index

In the megacity of Karachi, which has a population of more than 24 million, more than 9.2 million people (40 per cent) live in squatter settlements where there is poor awareness of major health issues. Communities here are characterised by low socioeconomic settings, crowded living conditions, inadequate water and sanitation facilities, and poor health-related behaviours. Such conditions create an environment favourable to the spread of communicable diseases like tuberculosis (TB), hepatitis and dengue, and recent years have seen an explosive increase in the spread of these communicable diseases. Today, approximately every thirteenth Pakistani is infected with either hepatitis B or C. In the Middle East and Asia Pacific Region, Pakistan comes second after Egypt for the highest hepatitis C prevalence rate, which equates to around 4–5 per cent of the population being infected (Rabbani, Hashmani & Khuwaja 2014). In developing countries with very poor sanitary conditions and hygiene practices, most children (90 per cent) have been infected with hepatitis A before the age of 10 (WHO 2016a). Similarly, Pakistan has experienced a number of dengue fever outbreaks in recent years, including the 2005 Karachi outbreak, in which 4500 dengue cases were registered, followed by outbreaks in Punjab and other areas. In terms of tuberculosis, Pakistan ranks fourth among the six countries facing the highest burden of this disease (National TB Control Program 2014).

To help combat the above, the Urban Health Program (UHP), run by the Department of Community Health Sciences (CHS) at the Aga Khan University (AKU), Karachi, instigated the AGAHI program, which ran for one year from mid 2015 to mid 2016. AGAHI – meaning 'awareness' in Urdu – was a fast-acting, innovative mass health awareness program designed to help prevent and control hepatitis, dengue and tuberculosis.

In just 12 months, the AGAHI program focused its efforts on two selected squatter communities, Rehri Goth and Sultanabad (population approximately 75 000 each). Collaborative activities ranged from school sessions, role plays and lane meetings to training of health care workers, medical camps and

collaboration with local religious leaders and public sector and non-governmental organisations. Overall, 80 health awareness sessions were conducted with 4000 participants, including both men and women of different age groups and occupations and children. Moreover, high-risk and vulnerable populations were identified through facility-based records and community-based work, screened for the three communicable diseases (374 screened), provided with family support counselling and referred for treatment through liaison with other public and private providers. Upon completion, a comparative cross-sectional survey revealed a significant increase in the knowledge of residents of Sultanabad versus a control neighbourhood, especially with regard to the vector of dengue fever and personal prevention measures.

These results demonstrate the value of targeted community-based health awareness campaigns, especially in vulnerable megacities like Karachi. However, the potential impact of the AGAHI program rests on the long-term commitment and collaborative efforts of the Urban Health Program run by the Department of Community Health Sciences at AKU. The UHP has been delivering a Primary Health Care program in the disadvantaged urban squatter settlements of Karachi since 1985. From the outset, it was conceived as a community-campus partnership model with the overall goal of contributing to a reduction in health inequities by addressing the underlying socioeconomic determinants of health through sustainable community-oriented health and social development initiatives. Its aims include: develop a model of excellence in primary health care for urban squatter settlements; develop capacity in these communities to better manage their own health and social development; provide rigorous research, learning and teaching opportunities for medical and nursing students; and contribute to policy development in this area. This article argues that the importance of rigorous community-campus collaboration, conducted within a framework of social accountability, cannot be overemphasised, particularly if sustainable change and awareness is to occur.

BACKGROUND: THE THREE MAJOR INFECTIOUS DISEASES OF POVERTY

Hepatitis A, B and C, dengue fever and tuberculosis are among the world's most common and devastating communicable diseases. Viral hepatitis is a serious global public health problem. At present, six distinct types of hepatitis virus have been identified (A, B, C, D, E and G) (Bosan et al. 2010). Around 170 million patients worldwide are diagnosed as being chronically infected with hepatitis C. Approximately two billion people have been infected with the hepatitis B virus globally. Within Pakistan, the reported prevalence of hepatitis C is about 4–7 per cent and that of hepatitis B, about 3–4 per cent, according to the findings of different surveys within the country (Ashraf & Ahmad 2015; Rabbani, Hashmani

& Khuwaja 2014). According to the World Health Organization (WHO), hepatitis A affects 1.4 million people globally, and is spread by poor food and hygiene, lack of proper sanitation and unsafe water (WHO 2014b). Improved sanitation, food safety and immunisation are the most effective ways to combat hepatitis A, while the hepatitis B vaccine is the mainstay of hepatitis B prevention (WHO 2016a, c). The most effective way to combat hepatitis C is to prevent its blood-borne and vertical transmission. Multiple strategies are required for effective and sustained knowledge change.

The global incidence of dengue has grown dramatically in recent decades and is currently endemic in over 100 countries, affecting 50–100 million people annually (Syed et al. 2010). Pakistan has experienced a number of dengue fever outbreaks since 1992, including the 2005 Karachi outbreak, but also, in 2011, the nation experienced its worst occurrence of dengue in which more than 20 000 cases and 300 deaths were officially reported (Khanani, Arif & Shaikh 2011). At present, in the absence of any vaccination and antiviral therapy, the only method to control or prevent the transmission of dengue virus is to carry out effective vector control measures (WHO 2016d). The World Health Organization has developed an Integrated Vector Management policy which requires a multi-sectoral approach (Khan & Hasan 2011).

Tuberculosis (TB) is one of the most major causes of mortality in the developing world. According to WHO data, in 2015 over 10 million fell ill with TB, while nearly 2 million died from the disease. Furthermore, almost all TB deaths occurred in low- and middle-income countries (WHO 2017e; see also Agboatwalla et al. 2003). Despite efforts to halt TB, Pakistan is still facing a high burden and has the eighth highest TB burden globally. Alone, Pakistan accounts for 44 per cent of the TB burden in the Eastern Mediterranean Region. It is currently estimated that there are around 1.5 million TB patients in Pakistan, increasing every year by 250 000 (WHO 2014f). Anti-TB treatment is of long duration and there is the risk of quitting medication before the completion of treatment, as well as non-compliance to the recommended medication dose. Regular and complete medication intake gives individual TB patients the best chance of cure and also limits TB transmission within the community. The emergence and spread of multidrug-resistant TB further reinforces the absolute necessity of helping a TB patient not to miss any medication dose. In the Stop TB Strategy, which UHP follows, supervision and patient support are an important cornerstone of the WHO-recommended Directly Observed Treatment, Short Course (DOTS) program, currently being implemented by the Government of Pakistan to control TB (National TB Control Program 2014; WHO 2010g).

THE URBAN HEALTH PROGRAM

Since its development in 1985, the Urban Health Program (UHP) of the Department of Community Health Sciences (CHS), Aga

Khan University, has operated in 17 different urban squatter settlements of Karachi. These communities include Orangi Town, Karimabad, Essa Nagri, Grax Village, Chanesar Goth, Azam Basti, Baba Island, Hijrat colony, Ibrahim Hyderi, Moinabad and Future Colony. Health and social issues in these communities are numerous: poverty, illiteracy, environmental degradation, poor water and sanitation, overcrowding, high fertility rates, lack of women's rights and safety, high mortality and morbidity from preventable diseases, and lack of quality health care services. Before the development of the CHS, medical and nursing students received clinical training in the private hospitals, far from the realities faced by the great majority of the local population. The link with communities – medical, pedagogical, social and ethical – was missing. The Department of Community Health Sciences thus developed the Urban Health Program, which is now a leading public health program in the country.

Core components of the Urban Health Program include:

—**Health awareness:** The UHP provides community-oriented primary health care to communities both in their homes (outreach at the community's doorstep) and at the UHP health centre (facility-based, one per community), with a multidisciplinary team of health care providers such as Lady Health Visitors, family medicine and community medicine residents, medical students, social mobiliser, MIS technician and supporting staff. The primary focus is to improve the health of mothers and children. UHP conducts clinics five days a week at both field sites: on average per quarter there are approximately 1000+ consultations and around 300 children and 30 pregnant women are routinely vaccinated at each site. As part of the National Immunization Day campaign (approximately 15 days per year), more than 3000 children are vaccinated.

—**Social integration:** Social development activities have been a core component of UHP since 1996. These activities encompass four key aspects: community mobilisation and training of volunteers; health awareness; income generation for women; and provision of safe water and sanitation. Currently, two home-based primary schools of 200 students each are successfully running at Sultanabad.

—**Community-oriented medical education (COME):** UHP sites have also been the focus of the COME curriculum, a pioneering program implemented by the Department of Community Health Sciences (Rabbani et al. 2005). Medical, nursing and dental undergraduate students, graduate students (MSc program) and trainees (Community Medicine Residents and Family Medicine Residents) are rotated between the field sites where they work with families to create awareness around health issues. In 2016, 549 medical students participated, along with two international students.

—**Research:** UHP is the hub of community-oriented research, which focuses on maternal, neonatal and child health, non-

communicable diseases, social determinants of health, health policy and health system development. A Health Demographic Surveillance System has been set up at the Sultanabad site to identify at-risk households and create health awareness about preventable diseases; two rounds of surveillance have already been conducted. Alongside the publication of more than 90 articles in peer-reviewed journals, findings are shared with the communities. Building their awareness is an integral component of all research studies.

—**Community participation:** The communities play a very important role in all of the components of UHP, and currently partnerships exist with both communities, including the CHMA (Community Health and Management Association) at Sultanabad and the RHDO (Rehri Health and Development Organization) at Rehri Goth. Regular meetings are held to carry out need identification, followed by planning and execution of projects, activities and surveys etc. in which they enthusiastically participate. Dissemination of all the research work is done in a socially acceptable way and all the events are organised together.

Consequently, over 30 years of community-campus engagement, a clear and trusted process has emerged that delivers outcomes to multiple stakeholders in diverse ways. For the community, collaboration is underpinned by four key stages of community development (Figure 1).

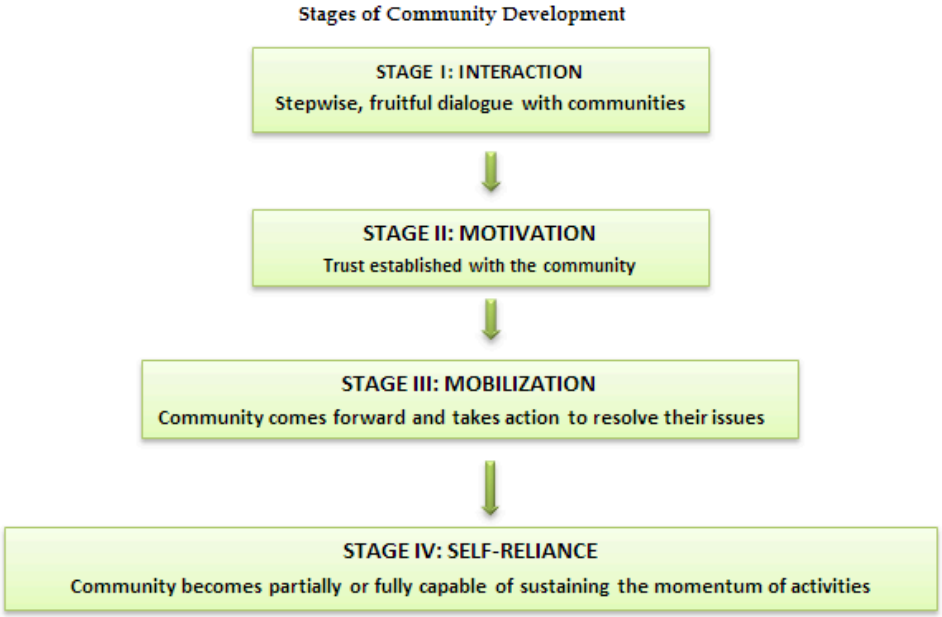

Figure 1: Adapted from 'IFAS Community Development: Stage 1 of Empowering your community-initiation', by J Marcus, M Brennan, M Kumaran, R Cantrell & M Spranger, University of Florida, IFAS Extension, 2015, http://edis.ifas.ufl.edu/fy740. Image reproduced with permission of *Pak J Public Health*, 2012, vol. 2, no. 1, pp. 71–3.

In the first stage of interaction there is stepwise fruitful dialogue between campus and communities, leading on to the motivational phase as trust builds up. In the third stage of mobilisation, the community comes forward to address its issues and, finally, in the self-reliance stage, the community becomes progressively capable of self-sustaining the momentum of activities. It is anticipated that after a number of years of working with a community the UHP will withdraw, although providing ongoing technical support. In a small number of squatter settlements this

has occurred, with the successful formation of diverse community management teams, now registered as community-based organizations (CBOs) with the Sind Social Welfare Department. In recognition of this work of the UHP, the Aga Khan University received the international MacJannet Award for exceptional community engagement in 2009 (Rabbani et al. 2012).

THE AGAHI PROJECT

In recent years, using the surveillance and facility-based records collected through UHP's work, researchers realised that dengue, hepatitis and TB required special attention and activities on a scale that was larger than could be accommodated as part of UHP's core work. Moreover, having an already well-established participatory model, with social accountability measures in place, it was felt that specific rigorous activities would be most easily undertaken under a dedicated mass awareness program: AGAHI. Funded by Pakistan's Higher Education Commission, the objective of AGAHI was to improve and enhance the health awareness of communities regarding TB, hepatitis and dengue to aid in their prevention and control. The AGAHI team conducted an extensive literature review and was able to benefit from evidence-based methods used in similar contexts elsewhere to develop a program that emphasised behaviour change around vaccine uptake, personal and food hygiene, care-seeking and compliance to treatment. The communities targeted were two squatter settlements: Sultanabad and Rehri Goth in Karachi. Both communities have low socioeconomic settings with small houses and inadequate water and sanitation facilities and poor health-related behaviours. Such conditions create an environment favourable to the spread of communicable diseases like tuberculosis, hepatitis and dengue. Because of this vulnerability – as well as the potential for prevention through the implementation of appropriate measures – UHP targeted these two communities.

METHODOLOGY

Study Sites and Time Period

The project AGAHI was carried out from August 2015 to August 2016 in the urban squatter settlements of Sultanabad and Rehri Goth. The former is a very old squatter settlement of Karachi, located in District West, Kemari Town, covering an area of 0.5 square km. The population is approximately 75 000, divided into nine sectors. The commonly spoken languages are Pushto (55 per cent) and Hindko (45 per cent). While the older people (>40 years) are generally illiterate, the new generation has acquired both primary and secondary education through government and private schools within the vicinity. The majority of the men are involved in service-related professions or are working for daily wages. Women contribute towards household income primarily through cottage industries.

Rehri Goth is located in District Malir, Bin Qasim Town. The area is divided into 16 paras (sectors). Each para is named after the head of the local clan based on their social groups. Total population is more than 70 000. The majority of women are housewives, while men are fishermen. Women contribute to family income by sorting prawns and small fish. Children under five form 14 per cent of the total population, and approximately 22 per cent of women are in the reproductive age. The major language spoken is Sindhi; literacy levels here are lower than in Sultanabad.

Process

1 *Diagnosis of disease:* According to the plan, the existing AKU Primary Health Care centres at Sultanabad and Rehri Goth operated as the first level of care. Initially, diagnosis of diseases based on symptom algorithms and simple laboratory tests were done at the centres. Data was collected manually at the field sites. A software program at the Department of Community Health Sciences assisted the health centre staff in maintaining, in a protected and confidential manner, the medical history of all patients with hepatitis, tuberculosis and dengue. By studying patient records from the UHP Primary Health Care centres, AGAHI was able to identify patients at high risk of these diseases. The patients needing advanced management were referred to other secondary and tertiary care hospitals including both government and private hospitals. In these cases, a referral form with the patient's relevant history was given to the patient, for taking to the specialist. A copy was held at the centre, allowing for follow-up with the patient to ensure compliance. Patients and their families visiting the health care centre were also provided health education by the staff through posters and audio-visual demonstrations. In the case of tuberculosis, once identified, patients were then personally visited by the AGAHI team, and they, along with their entire families, received advice on TB diagnosis and treatment. They were then referred to diagnostic and treatment centres. Many community members were unfortunately unaware of the free treatment programs run by the government. AGAHI made efforts to inform these patients of the services provided by the government.

2 *Health awareness:* This was created through outreach campaigns in the communities, building on and strengthening existing collaborations with community management teams, volunteers, religious leaders, school teachers and social workers. In addition to this, involvement extended to women's groups, health care providers, media, government officials and families of the affected people. All stakeholders were involved, with a total of 100 or more beneficiaries participating in each activity. Seminars, training sessions, meetings and workshops were conducted to train these people for awareness regarding symptoms, screening, compliance to treatment, limiting transmission and prevention.

Health education and disease prevention was carried out for each disease in a separate manner.

Hepatitis

AGAHI focused on creating awareness about hepatitis so that people had proper knowledge about causes, signs and symptoms, danger signs, modes of transmission, treatment and prevention strategies. To ensure every demographic group in Sultanabad and Rehri Goth was reached, each awareness session or activity was held with different groups at different places. Apart from the numerous outreach activities, for hepatitis B and C risk assessment was done at the UHP Primary Health Care centre using standard recommendations for testing and vaccination. Moreover, once every quarter, 'Hepatitis Days' were organised in the community. On these days, audiovisual materials such as banners, pamphlets, placards and films were prepared and disseminated in the community.

Below is the narrative summary of activities:

—**Activity I: Education sessions for community members** Mothers, pregnant women and men were targeted during these activities. A total of three centre-based sessions were conducted, in which more than 100 people participated. Sessions not only focused on etiology of diseases but also on hepatitis B vaccination, especially for pregnant women and newborn babies. Furthermore, special education sessions for community members were held to raise awareness regarding risk of transmission via nose and ear piercing and sexual transmission, and to encourage risk assessment.

—**Activity II: School sessions for personal and environmental hygiene** Five school-based sessions were held at both field sites, at which more than 100 students were educated about types, causes and symptoms of hepatitis with the help of different PowerPoint presentations, brochures and pamphlets. These sessions also created awareness about preventive measures for blood-borne diseases and the role of personal and environmental hygiene in the prevention of infectious diseases.

—**Activity III: Community-based lane sessions** Lane sessions were the most fascinating part of the AGAHI strategy, involving community men and women of all ages. These sessions focused on identification of hepatitis patients in the communities on the basis of signs and symptoms and created awareness regarding treatment options. These sessions also aimed to reduce myths about jaundice and hepatitis.

—**Activity IV: Infection control training** Two types of infection control trainings were carried out, in which two high-risk groups were targeted (health care workers and barbers). The importance to health care workers of adopting infection control measures for self-care and patient safety was reinforced. AGAHI trained both at-risk groups about the precautionary steps they could take to ensure they did not contract or spread hepatitis. For instance, barbers were encouraged to use Pyodine (Povidone iodine) to disinfect their shears and abstain from reusing razor blades).

—**Activity V: Meeting religious leaders to address vaccine hesitancy** These meetings mainly focused on sources of hepatitis exposure. Causes and preventive strategies were also explained. Religious leaders were requested to spread the message of the necessity for people to be vaccinated to prevent hepatitis B (Jarrett et al. 2015.

—**Activity VI: Community-based general practitioners' clinic visits** Apart from awareness sessions on hepatitis, infection control sessions were held with community-based general practitioners who, like barbers, are vulnerable to contracting and/or spreading hepatitis. In particular, general practitioners were educated about proper disposal of syringes and sharp waste. Information material on hepatitis causes and preventive strategies developed by the World Health Organization, as well as pamphlets, were distributed to all participants to ensure reinforcement of preventive practices for hepatitis B and C. Additionally, meetings with community-based general practitioners were held to develop a strong referral system.

Tuberculosis

AGAHI aimed to create awareness about tuberculosis so that vigilance would be built into the community about the risk factors and significant social determinants of tuberculosis. Monthly TB screening at the UHP centre was done based on symptoms. Moreover, there was interaction with families of TB patients in

order to encourage them to fully support patients to improve treatment compliance. In line with best practice in other settings, AGAHI had a focused strategy to overcome the gaps in the successful prevention and treatment of TB (Awaaz Nepal n.d.; Gothankar 2013; Palve et al. 2015). As well, as was done with hepatitis, PowerPoint presentations, posters and pamphlets were used to disseminate information. These materials contained facts on risk factors and preventive strategies as provided by WHO and the National TB Control Program Pakistan.

In total, 27 awareness sessions on tuberculosis were held, with a total of 1138 people participating in the various activities. Since there is a lot of stigma attached to tuberculosis, all community members were encouraged to support TB patients.

Below is the narrative summary of activities:

—**Activity I: Centre-based awareness sessions** To address tuberculosis, six centre-based awareness sessions were held at Primary Health Care centres at Rehri Goth and Sultanabad, in which more than 100 participants, including pregnant and post-natal women, were educated about identification and prevention of tuberculosis. Mothers were encouraged to adopt BCG vaccination for their child at the time of birth.

—**Activity II: School-based awareness sessions** Students were taught about TB and its preventive strategies through different educational materials like handmade posters, brochures and PowerPoint presentations. In total, seven school-based sessions were held, through which more than 200 students and their teachers acquired knowledge about modes of transmission, signs and symptoms, treatment and prevention.

—**Activity III: Lane sessions** Five lane sessions were held at both field sites, in which 68 community women participated. AGAHI used these sessions to focus on educating women to recognise and understand transmission of the disease. Care was also taken by the AGAHI team to urge community members to seek medical attention as soon as they had any symptoms and to adhere to the treatment plan to avoid multidrug-resistant tuberculosis. For men, special education sessions were organised by male staff, involving door-to-door campaigns and screening camps.

—**Activity IV: Door-to-door campaigns** During door-to-door campaigns infection control strategies were discussed with community members, including wearing masks in the presence of a known tuberculosis patient and abstaining from spitting on streets and floors.

—**Activity V: Interaction with families of TB patients** Three interactive sessions were carried out, in which all immediate family members were educated about causes, treatment and prevention. We also discussed their family history and attempted to identify the causes of TB persistence in their families. AGAHI referred three families to free screening camps and treatment centres and subsequently followed up with them.

—**Activity VI: Tuberculosis screening camp** AGAHI built links between the communities of Sultanabad and Rehri Goth and Green Star. This non-government organisation (NGO) specialises in controlling tuberculosis in five metropolitan cities in Pakistan, and has successfully treated more than 40 000 patients. Tuberculosis screening camps were held in Sultanabad and Rehri Goth, where more than 85 community members received check-ups by chest specialists and had their sputum tested for acid fast bacilli.

—**Activity VII: Poster competitions** More than 50 students from different schools at Rehri Goth and Sultanabad participated and prepared posters for these competitions, and more than 300 students visited the poster display areas. These events were a great showcase of students' knowledge about tuberculosis and its causes. Students also briefly described their thoughts regarding tuberculosis through poster presentations.

Dengue

Based on models of success elsewhere, the AGAHI program adopted school-based health education and environmental interventions (Espino et al. 2012; Khun & Manderson 2007; Madeira et al. 2002). AGAHI used various methods to create awareness about how unhygienic living conditions and improper water storage practices can create breeding grounds for dengue-carrying mosquitoes. Insecticide Residual Spraying (IRS) activity was done in collaboration with district health officials. The walk against dengue and role play were especially useful strategies, as these entailed active participation from community members, ensuring that all were given the opportunity to willingly take part in the development work that AGAHI carried out. Furthermore, community members were urged to report to the health care centres as soon as they suspected dengue symptoms and to refrain from self-medication. During November, a dangerous month during which dengue mosquitoes breed, AGAHI worked alongside the UHP Water and Sanitation Week, holding awareness sessions showing how unsanitary conditions could lead to dengue. During this week, a total of 2070 people participated.

Below is the narrative summary of activities:

—**Activity I: School health sessions on dengue vector and prevention** In total, 13 schools and two madrasa-based sessions

were held during this period. Schools were emphasised, as they are the primary place where a maximum number of people can gather – children, teachers, parents and members of the community management teams – and where a maximum amount of information can be disseminated. Moreover, children are very receptive and can be key players in helping to spread awareness. Every school awareness session paid attention to signs and symptoms of dengue, for example, fever, headaches, rashes, joint and muscle pain. Emphasis was also given to diagnosis of the disease as well as mode of transmission. Not only were students informed about dengue, their schools were inspected so that breeding sites could be identified and personal and environmental measures could be implemented. Students were encouraged to promote health education in their homes and families.

—**Activity II: Centre-based sessions** These were held in the primary health care centre at Rehri Goth and Sultanabad, and more than 100 participants, including women and children, were educated about identification and prevention of dengue fever. These sessions emphasised 'Adopt preventive strategies to stop dengue'.

—**Activity III: Lane sessions and house inspections** Two lane sessions were held, in which 70 women and children were targeted and educated about dengue mosquitoes and preventive measures. In addition, houses were inspected for potential breeding places and families were given advice on prevention of mosquito breeding within the house.

—**Activity IV: Walk against dengue** This walk was arranged in both Sultanabad and Rehri Goth, where a number of school students displaying anti-dengue posters and chanting slogans marched through their communities to raise awareness about dengue. These events were organised through the combined efforts of community leaders, students, teachers and the UHP team.

—**Activity V: Role play** The AGAHI team also organised a role play for the school children of Rehri Goth. During this, the young audience was shown how dengue spreads and the treatment and prevention of dengue.

RESULTS

During a one-year period, 80 educational sessions were conducted at Rehri Goth and Sultanabad, where more than 4000 people participated in health education activities related to hepatitis, tuberculosis and dengue. Different activities were carried out, including 12 lane sessions, 13 centre-based sessions, 27 school-based sessions, and door-to-door campaigns. Infection control workshops were also conducted with high-risk populations such as barbers and health care workers. Furthermore, two free tuberculosis screening camps were organised in collaboration with NGOs. The involvement of all stakeholders was achieved, extending to religious leaders and institutions and community-based general practitioners.

As a first step to assessing the effects of AGAHI on the knowledge of communities, a comparative cross-sectional survey was conducted in Sultanabad and Hijrat Colony. Hijrat Colony was selected as the control site because this locality is similar to Sultanabad in terms of sociodemographic characteristics such as ethnicity, education, occupation and income.

Data was collected via a structured questionnaire, which was translated into Urdu, the national language and understood by 90 per cent of the population. (In addition, if necessary, data collectors were fluent in Pashto; the other local language, Hindko, is a variant of Urdu.) The survey was conducted orally. Analysis was done on SPSS (Version 19.0). Chi-square and independent sample t-tests were applied for comparison. P-values less than 0.05 were considered significant.

Table 1 shows the comparison of knowledge regarding dengue between Sultanabad and Hijrat Colony. Significantly higher numbers of correct symptoms were reported from Sultanabad compared to Hijrat Colony, showing a higher level of knowledge about dengue symptoms in Sultanabad. Misconception about the vector of dengue was found to be higher in Hijrat Colony: only 6 per cent of the respondents in Sultanabad, but 23 per cent in Hijrat Colony, considered flies as the vector of dengue (p-value 0.001). Knowledge about personal and environmental measures against dengue was also higher in Sultanabad (Table 1).

Table 1: Comparison of knowledge regarding dengue.

Characteristics	**Sultanabad %(n) (n=105)**	**Hijrat colony %(n) (n=114)**	**p-value**
Number of symptoms identified by the respondents			
Mean (SD)	1.8 (1.0)	1.4 (0.99)	<0.05
How does Dengue fever spread?			
Flies	6.5(6)	22.9(25)	0.001
Mosquitoes	55.9(52)	51.4(56)	0.519
Water	60.2(56)	37.6(41)	0.001
Identified appearance of dengue mosquito			
Correct	9.7 (9)	4.6(5)	0.018
At least one correct personal measure	82.9(68)	70(66)	0.044
Number of environmental measures			
Mean (SD)	1.33 (1.0)	0.97 (0.65)	<0.05

Additionally, in September 2016, a second round of surveillance was conducted in Sultanabad, showing better outcomes due to the stringent follow-up of pregnant women and malnourished children, and utilisation of family planning methods.

DISCUSSION

The World Health Organization defines the social accountability of medical schools as representing 'the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, or nation they have a mandate to serve' (Boelen & Heck 1995). Others emphasise the civic engagement at its core: social accountability is 'accountability that relies on civic engagement, i.e. in which citizens and/or civil society organizations participate directly or indirectly in exerting accountability and holding politicians, policy makers and service providers responsible for their performance' (Mafuta et al. 2015).

Social accountability is one among many measures that have improved the delivery of services in urban areas and the accountability of service providers to citizens (UNDP 2013). According to Marius Wanders (2015), in everyday life social accountability plays a very important role: it makes communities aware of their basic rights; gives them access to information; and makes them a part of decision-making and work that

involves them. In the health field, social accountability involves a commitment by practitioners and researchers to respond as best as possible to the priority health needs of citizens and society. Social accountability concepts and tools are increasingly being integrated into health care systems to strengthen them and improve the quality of services. The increased responsiveness achieved through the use of social accountability mechanisms ultimately results in an improved health care system, such as an increase in user satisfaction and service utilisation, improved quality of services and decrease in the prevalence of disease (McGinn & Lipsky 2015). Ultimately, social accountability systems imply accountability and responsibility to society for those actions intended to serve it. They are vital as they lead to sustainable change in health outcomes. That UHP has been able to work with communities in the squatter settlements of Karachi for over 30 years is due in large part to its social accountability approach. During this time, there have been real and significant improvements, such as a reduction in mortality and morbidity rates and an increase in the number of women participating in economic activity.

The first two phases of community development, as practised by UHP, are the most important, as this is when trust is developed; when trust and understanding occurs, the communities come forward of their own initiative to take part in the activities. This helps in building respect and the communities' eventual ownership of future endeavours. The community management teams hold the UHP team accountable in specific ways, such as the attendance of UHP staff at their outreach activities and at the initiation of new projects, and through the dissemination of information and presentation of quarterly and annual data. They also give input and provide innovative ideas across all activities. By investing in the capacity of community representatives to manage the program themselves has meant that, in a small number of settlements, UHP has handed management of activities over to the community-based organisations, with the UHP providing only technical support as and when required.

Similarly, it is the strength of our relationships that helps mitigate the undeniable challenges of resource limitation and fatigue. The UHP program is included as part of the core budget of the university and is further supplemented by funds and grants, which allow the university to conduct other projects such as AGAHI. However, more than funds, the real essence of the program lies with the skills and expertise of faculty and students, and the long-term unconditional services that are offered to the communities. Our continuous presence in the squatter settlements over so many years has resulted in a high level of acceptance and trust by the communities, which in turn has encouraged community ownership, self-empowerment and program sustainability.

For the students, the Department of Community Health Sciences (CHS) is a pioneer in our region in community-based health. Medical students are exposed to community issues right

from the beginning, no matter where they come from. Students are taught to better understand the health systems and the underlying context to health issues. This is not the usual practice in other universities in Pakistan. Moreover, in addition to the medical and nursing students and residents, students from the Diploma in Dental Hygiene, midwives and international students and volunteers are providing services and carrying out their research projects in these communities. Interaction with a variety of national, provincial and local non-government organisations, hospitals, and policy makers and government officials gives students exposure to policy planning and public health as a career option. However, this breadth and depth of activities would be impossible to sustain without respectful and genuine community participation. Indeed, one of the greatest successes of this program has been the creation of leaders among students, faculty and community.

CONCLUSION

The promotion of community participation in public health efforts to achieve improvements in health and wellbeing dates back to the 1978 Declaration of Alma-Ata. In our region, a few models of successful community participation projects with social accountability mechanisms can be seen in rural Nepal and rural Cambodia, where the citizens are empowered to express their views and concerns regarding the quality of health facility performance. In such instances, community members' opinions are taken into account in the decision-making process, contributing to changes in the healthcare service delivery structure, such as adapting new health services to address their needs (Mafuta et al. 2015). Thus, involving citizens is an important strategy to improve the relationship between providers and clients, particularly in fragile communities which are characterised by weak governance systems and poor health indicators (Boydell & Keesbury 2014).

The Aga Khan University has striven to develop a core university program that provides excellent, continuing and replicable learning opportunities for faculty, staff and students while delivering vital and sustainable improvements in the lives of urban squatter communities. To comprehensively tackle the spread of communicable diseases, for example, the underlying issues of poverty must also be comprehensively addressed. As a consequence, the UHP has expanded upon its routine Primary Health Care activities and now works in other health and social development areas in need of attention, such as breast screening and referrals, mental health, child abuse, early childhood development, child labour, early marriages, the involvement of male members of the community in sensitive topics like family planning and transmission of infection, tobacco control and drug abuse, schooling (especially for girls), micro-credit programs and skills building for women.

Despite the above efforts, in a megacity like Karachi, the need for targeted basic health awareness campaigns cannot be overemphasised. The AGAHI program, with a little bit of fine tuning and adaptation for specific interventions, could be utilised for a range of communicable and non-communicable diseases, as well as other health and social development activities. However, we remain very aware that, if sustained change is to occur, community participation within a framework of social accountability methods is essential.

REFERENCES

Agboatwalla, M, Kazi, G, Shah, S & Tariq, M 2003, 'Gender perspectives on knowledge and practices regarding tuberculosis in urban and rural areas in Pakistan', *Eastern Mediterranean Health Journal* (WHO), vol. 9, no. 4, pp. 732–40.

Ashraf, S & Ahmad, A 2015, 'Viral hepatitis in Pakistan: Challenges and priorities', *Asian Pacific Journal of Tropical Biomedicine*, vol. 5, no. 3, pp. 190–91. doi: https://doi.org/10.1016/S2221-1691(15)30004-6

Awaaz Nepal n.d., 'Raising TB awareness in remote districts of Nepal', viewed 7 June 2017: http://www.stoptb.org/assets/documents/countries/acsm/Awaaz%20Nepal.pdf

Boelen, C & Heck, J 1995, 'Defining and measuring the social accountability of medical schools', World Health Organisation, Geneva.

Bosan, A, Qureshi, H, Bile, K, Ahmad, I & Hafiz, R 2010, 'A review of hepatitis viral infections in Pakistan', *Journal Pakistan Medical Association*, vol . 60, no. 12, pp. 1045–58.

Boydell, V & Keesbury, J 2014, 'Social accountability: What are the lessons for improving family planning and reproductive health programs? A review of the literature', working paper, Global Partnership for Social Accountability.

Espino, F, Marco, J, Salazar, N, Salazar, F, Mendoza, Y & Velazco, A 2012, 'Community-based dengue vector control: Experiences in behavior change in metropolitan Manila, Philippines', *Pathogens and Global Health*, vol. 106, no. 8, pp. 455–60. doi: https://doi.org/10.1179/2047773212Y.0000000061

Gothankar, J 2013, 'Tuberculosis awareness program and associated changes in knowledge levels of school students', *International Journal of Preventative Medicine*, vol. 4, no. 2, pp. 153–57.

Jarrett, C, Wilson, R, O'Leary, M, Eckersberger, E, Larson, H & SAGE Working Group on Vaccine Hesitancy 2015, 'Strategies for addressing vaccine hesitancy: A systematic review', *Vaccine*, vol. 33, no. 34, pp. 4180–90.

Khan, E & Hasan, R 2011, 'Dengue infection in Asia: A regional concern', *Journal of Postgraduate Medical Institute*, vol. 26, no. 1, pp. 1–6.

Khanani M, Arif A & Shaikh R 2011, 'Dengue in Pakistan: Journey from a disease free to a hyper endemic nation', Editorial, *Journal of the DOW University of Health Sciences*, vol. 5, no. 3, pp. 81–84.

Khun, S & Manderson, L 2007, 'Community and school-based health education for dengue control in rural Cambodia: A process evaluation', *PLoS Neglected Tropical Diseases*, vol. 1, no. 3, p. e143. doi: https://doi.org/10.1371/journal.pntd.0000143

Madeira, N, Macharelli, C, Pedras, J & Delfino, M 2002, 'Education in primary school as a strategy to control dengue', *Revista da Sociedade Brasileira de Medicina Tropical*, vol. 35, no.3, pp. 221–26. doi: https://doi.org/10.1590/S0037-86822002000300004

Mafuta, E, Dieleman, M, Hogema, L, Khomba, P, Zioko, F, Kayembe, P, de Cock Buning, T & Mambu, T 2015, 'Social accountability for maternal health services in Muanda and Bolenge Health Zones, Democratic Republic of Congo: A situation analysis', *BMC Health Services Research*, vol. 15, no. 1, p. 514. doi: https://doi.org/10.1186/s12913-015-1176-6

McGinn, E & Lipsky, A 2015, 'Social accountability: A primer for civil society organizations working in family planning and reproductive health', Futures Group, Health Policy Project, Washington, DC, viewed 7 June 2017: https://www.healthpolicyproject.com/pubs/449_PSocialAccountabilityReportFINALEC.pdf

National TB Control Program 2014, *Annual report 2013*, Ministry of National Health Services Regulations and Coordination, Islamabad, Pakistan, viewed 7 June 2017: http://ntp.gov.pk/uploads/Annual_Report_2013_NTP_Pakistan.pdf

Palve, S, Parkhad, S, Phalke, V & Phalke D 2015, 'Strategy to increase awareness and involvement of private medical practitioners in RNTCP in Taluka Rahata of District Ahmednagar', *Journal of Clinical and Diagnostic Research*, vol. 9, no. 2, pp. LC10–14. doi: https://doi.org/10.7860/jcdr/2015/10724.5523

Rabbani, F, Hashmani, F & Khuwaja, H 2014, 'Enabling factors for implementing hepatitis control policy in Pakistan: Let's take a health systems approach', *Pakistan Journal of Public Health*, vol. 4, no. 4.

Rabbani, F, Memon, F, Gul, A, Pradhan, N, Khowaja, F & Hatcher, P 2012, 'Model of a successful community campus partnership: Urban health program of Aga Khan University, Karachi', *Pakistan Journal of Public Health*, vol. 2, no. 1, pp. 71–73.

Rabbani, F, Shaikh, B, Mahmood, Q, Khan, K, Israr, S & Memon, Y 2005, 'Medical education and training: Responding to community needs', *Medical Science Monitor*, vol. 11, no. 10, pp. SR21–25.

Syed M, Saleem T, Syeda U, Habib M, Zahid R, Bashir A, Rbbani, M, Khalid, M, Iqbal, A, Rao, E, Shujja-ur-Rehman & Saleem, S 2010, 'Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups', *Journal of the Pakistan Medical Association*, vol. 60, no. 3, pp. 243–47.

UNDP 2013, *Reflections on social accountability: Catalyzing democratic governance to accelerate progress towards the Millennium Development Goals*, Oslo Governance Centre, UNDP, New York, http://www.undp.org/content/dam/undp/documents/partners/civil_society/publications/2013_UNDP_Reflections-on-Social-Accountability_EN.pdf)

Wanders, M 2015, 'No sustainable development without social accountability', post, European Year for Development, europa.eu website, viewed 7 June 2017: https://europa.eu/eyd2015/en/concord/posts/no-sustainable-development-without-social-accountability

World Health Organization (WHO),

a. 'Hepatitis A: Fact sheet', updated 2016, http://www.who.int/mediacentre/factsheets/fs328/en/
b. 'Hepatitis A and E', updated 2014, http://www.who.int/campaigns/hepatitis-day/2014/hepatitis-a-e.pdf?ua=1
c. 'Hepatitis B: Fact sheet', updated 2016, http://www.who.int/mediacentre/factsheets/fs204/en/

d. 'Dengue and severe dengue: Fact sheet', updated 2016, http://www.who.int/mediacentre/factsheets/fs117/en/
e. 'Tuberculosis: Fact sheet', reviewed 2017, http://www.who.int/mediacentre/factsheets/fs104/en/
f. 'Global tuberculosis report 2014', http://apps.who.int/iris/bitstream/10665/137094/1/9789241564809_eng.pdf
g. *Treatment of tuberculosis: Guidelines*, 4th edn, 2010, Chapter 6: Supervision and patient support, http://www.who.int/tb/publications/2010/9789241547833/en/