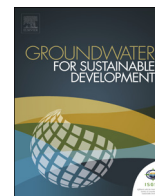




ELSEVIER

Contents lists available at ScienceDirect

Groundwater for Sustainable Development

journal homepage: www.elsevier.com/locate/gsd

Research Paper

Access to groundwater and link to the impact on quality of life: A look at the past, present and future public health needs in Mzimba District, Malawi

Kerstin Rieger^a, Rochelle H. Holm^{b,*}, Helen Sheridan^{a,c,*}^a Masters in Development Practice, Trinity College Dublin, School of Natural Science, Geography Department, College Green, Dublin 2, Ireland^b Centre of Excellence in Water and Sanitation, Mzuzu University, P/Bag 201, Mzuzu 2, Malawi^c Trinity College Dublin, School of Pharmacy and Pharmaceutical Sciences & Trinity International Development Initiative (TIDI), Panoz Institute, East End 3, Dublin 2, Ireland

ARTICLE INFO

Article history:

Received 10 August 2015

Received in revised form

10 June 2016

Accepted 22 July 2016

Available online 26 July 2016

Keywords:

Quality of life

Water quality

Public health

Sanitation and hygiene

Malawi

ABSTRACT

Imagine a world where you have to get up at 4am to walk for two hours in the dark to fetch water. This remains true in Malawi, where it is said that the Millennium Development Goals have been met. This research aimed at understanding the impact access to groundwater has on people's 'Being', 'Belonging' and 'Becoming,' as well as on people's capabilities and on their quality of life in Mzimba District, Malawi. Being, Belonging and Becoming define three life domains. Being reveals 'who one is,' Belonging reflects 'connections with one's environments' and Becoming relates to 'achieving personal goals, hopes and aspirations.' The study comprised of 210 households, four treatment groups based on communities consisting of households with access to a hand pump and compared to four control group communities, where households had no access to a hand pump. Results showed current awareness of environmental issues is linked to recognising future (5 years in advance) environmental challenges. There is a need to create awareness of water quality within the communities and point-of-use household water treatment. Both the treatment- and control group had a gap in sanitation facilities, with up to 27 people (5–6 households) sharing a single pit latrine. Polygamous marriages had implications on self-respect and led to neglect on the first wives. Focus group discussions revealed HIV, disabilities and mental health issues, including the use of drugs and alcohol, affect freedom, and created a burden, not only for affected individuals, but also for their extended families. Focus groups highlighted safe and clean drinking water, improved sanitation facilities, better hygiene, and accessible public health services as pressing needs. The implications of this study demonstrate, rural individuals 'Being', 'Belonging' and 'Becoming' need to be considered when addressing pressing public health needs, as Malawi works toward the Sustainable Development Goals for water supply.

© 2016 Published by Elsevier B.V.

1. Introduction

Improved drinking water sources became a reality for 2.3 billion people between 1990 and 2012 (United Nations, 2014). In 2015, 663 million people worldwide, mostly rural, still relied on unimproved water sources such as surface water from lakes or dams for drinking, cooking and hygiene purposes. In addition, globally 2.4 billion people still have no access to improved sanitation facilities and only half of the rural population uses improved sanitation facilities (UNICEF and World Health Organization, 2015).

In September 2015, the United Nations announced the new 17 Sustainable Development Goals (SDGs) replacing the MDGs. Goal 6 demands 'Clean Water and Sanitation' to "Ensure availability and sustainable management of water and sanitation for all" (UN Department of Economic and Social Affairs, 2015).

Although economic and social development in Sub-Saharan Africa is fundamentally reliant on the role groundwater plays, this resource-base and its use, are not sufficiently understood (Pavelic et al., 2012). There is a lack of reliable data in Sub-Saharan Africa and the records, when available, have been gathered in an unsystematic manner. The reasons are complex and numerous, including the absence of clear institutional responsibilities and protocols, lack of technical expertise, inadequate resources and the non-existence of database management systems (Adelana et al.,

* Corresponding authors.

E-mail addresses: riegerk@tcd.ie (K. Rieger), rochelle@rochelledholm.com (R.H. Holm), hsherdn@tcd.ie (H. Sheridan).

2008).

Malawi is a land-locked country in Sub-Saharan Africa with a population of 16.4 million (Malawi Government, 2011) and 83.9% living in rural areas (WHO/Unicef Malawi, 2014). Small farm size is driven by a high population density (Asfaw et al., 2014). In a socio-economic context, the agriculture sector is the main economic base of Malawi, with smallholder and subsistence maize farming as the main activities for the rural population (Environmental Affairs Department, 2008). Malawi's real GDP growth was 1.9% in 2012, and World Bank figures showed an increase to 5% in 2013, a further estimated rise to 5.7% in 2014 and 5.1% in 2015 (The World Bank Group Country, 2015). These estimated increases are driven by tobacco exports and growth in key sectors, including agriculture, services, and manufacturing (African Development Bank Group, 2015). Deficits of amenities in rural communities in Malawi predominantly include water and sanitation, health, education, household food security, transport and communication (Kalanda, 2007). Up to 80% of Malawians depend on renewable natural resources for subsistence and rain-fed agriculture (Yaron and U.U.P.-E, 2011), yet there is limited investment in irrigation.

Malawi's surface water resources are formed by a network of lakes and rivers including the Shire River, Lake Malawi and Lake Chilwa (Pavelic et al., 2012). The total annual rainfall is over 1600 mm, predominantly occurring from November to April (Pavelic et al., 2012; Malawi Government, 2008). The estimated annual groundwater recharge in Malawi ranges from 15 to 80mm (Water Department/UNDP, 1986). The Republic of Malawi Environmental Affairs Department (Environmental Affairs Department, 2008) has environmental concerns due to temperature changes and increased frequency of droughts and floods. Nationwide, floods in 2013 damaged both piped water networks and boreholes, and left unprotected wells, streams and rivers contaminated (UNICEF and 2013, 2013). Malawi is currently losing about US\$18.5 million due to water-connected economic losses (Water and Sanitation Program, 2012) which are likely to intensify with climate variability over the coming decades.

In Malawi, 89% of the population in rural areas use improved drinking-water sources, surpassing the MDG target (UNICEF and World Health Organization, 2015). Conversely, only 41% of the population in Malawi use improved sanitation facilities and only 3% of people have a hand washing facility at home equipped with soap and water (UNICEF and World Health Organization, 2015). Improved access to drinking water was identified as a top priority by the Republic of Malawi National Action Plan for Adaptation (NAPA) to climate change (Calow and MacDonald, 2009). The National Water policy in Malawi states: "The water services shall be provided using appropriate cost-effective technologies that are sustainable in the urban water services and for the rural areas, technologies shall conform to the Village Level Operation and Maintenance (VLOM) concept" (Malawi Government, 2005). VLOM is tasked with: "Promoting the diversification of appropriate technologies for the provision of water and sanitation services to the rural communities in line with prevailing standardization policy" (Malawi Government, 2005). Policy responses to climate change exist in relation to groundwater and mostly focus on adaptation and risk management (Calow and MacDonald, 2009) rather than the impact that access to groundwater has on an individual's quality of life.

Quality of life is defined by Raphael et al. Raphael et al. (1996a) who describes it as 'The degree to which a person enjoys the important possibilities of his or her life' (p. 366) and is further defined by the three life domains of Being, Belonging and Becoming (Raphael et al., 1996b). The quality of life domains are further elaborated by Solans et al. Solans et al. (2008) who propose that Being reveals 'who one is' and contains sub-domains Physical-, Psychological- and Spiritual Being. Physical Being contains nutrition,

personal hygiene, physical health, exercise and clothing. Psychological Being involves mental health, feelings and self-esteem, whereas Spiritual Being includes personal values and spiritual beliefs. Belonging reflects 'connections with one's environments' and has sub-domains Physical, Social and Community Belonging. Physical Belonging depicts the connection a person has with its workplace, environment at home, school and community. Social Belonging includes the linkages with someone's social environment, such as family, friends, neighbours and colleagues. Community Belonging characterises access to adequate health and social services, income, employment, educational programme and community events. Becoming relates to achieving personal goals, hopes and aspirations and contains sub-domains: Practical, Growth and Leisure Becoming. Practical Becoming contains paid work, satisfying health or social needs. Growth Becoming comprises of adaptation to change and improvement or maintenance of knowledge and skills. Leisure Becoming contains activities, which promote stress reduction and relaxation.

Quality of life is reported to be more impacted by lack of freedom and lack of capabilities such as sickness and disabilities than by income; they influence the quality of life for the whole family (Sen, 2013). Nussbaum (Nussbaum, 2006) outlines many privileges, stressed in the human rights movement, which are included in Nussbaum's and Sen's approach: free choice of profession, freedom of association, political rights and a range of social and economic rights (Nussbaum, 2006). Nussbaum (Nussbaum, 2006) reinforces Sen's emphasis on the importance of what people essentially are able to be or to do, the significance level of their capabilities. Cohen emphasised that Sen describes capabilities as 'a reflection of a person's freedom to choose between different ways of living' (Nussbaum and Sen, 1993). Furthermore, Cohen pointed out a capability is relevant and essential when its absence hinders the person from satisfying basic needs (Nussbaum and Sen, 1993). Sen further underlines *functionings*, such as being in good health and sufficiently nourished, are elementary (Nussbaum and Sen, 1993). Others may be commonly valued, however are more complex, like social integration and achieving self-respect. Sen notes in the circumstances such as managing severe poverty in developing countries, it might be possible 'to go a fairly long distance with a relatively small number of centrally important functionings and the corresponding basic capabilities' (Nussbaum and Sen, 1993) such as to avoid preventable diseases, sicknesses and premature fatality and the ability to be well sheltered and well nourished. A little can go a long way.

The aim of this study is to review the gap in how access to groundwater impacts upon people's capabilities and quality of life as defined by 'Being', 'Belonging' and 'Becoming,' by comparing communities with and without access to a handpump in Mzimba District, Malawi. The research study creates associations between natural resource management on one hand, and economic well-being, poverty reduction and development on the other. This study has four objectives, investigated in the eight study villages: (1) to survey how access to groundwater through handpumps placed on shallow-dug wells in Northern Malawi impacts quality of life at a community, family and individual level, (2) to understand how access to groundwater impacts regional public health needs, (3) to investigate challenges towards securing clean drinking water which may be interlinked such as education, economic situation, sanitation and hygiene, food security, water availability and climate change, and (4) to analyse water shortages and communities perception of safe and clean drinking water.

2. Materials and methods

Ethical approval for this study was obtained from the National Commission of Science & Technology (NCST) in Lilongwe (Malawi)

Download English Version:

<https://daneshyari.com/en/article/4476261>

Download Persian Version:

<https://daneshyari.com/article/4476261>

[Daneshyari.com](https://daneshyari.com)