

**The Insights of Outsiders: Investigating Learner Perceptions of the Mass Treatment
Campaign's Communication Strategy for Schistosomiasis Prevention in Ugu District,
South Africa.**

By

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Abstract

Schistosomiasis, commonly referred to as bilharzia is a neglected tropical parasitic water borne disease prevalent in developing countries and is endemic in KwaZulu-Natal, South Africa. The World Health Organisation (WHO) aims to eliminate bilharzia as a public health problem by the year 2020 and as a measure to work towards this goal, the South African Department of Health (DoH) Ugu District, KwaZulu-Natal commenced a Mass Treatment Campaign (MTC) targeted at rural schools to decrease bilharzia infection intensity and prevalence levels. The DOH MTC utilises communication materials to communicate with stakeholders and the public to create awareness of the campaign and bilharzia. This study specifically explored the perceptions of learners towards the communication materials used by the DOH MTC to communicate with the learners in order to generate improvements for the current communication strategy.

The ability of an individual to receive information is commonly impacted by the community, social networks and the environment and infrastructural settings of the community. The Social Ecological Model of Communication and Health Behaviour (SEMCHB) acknowledges that such factors may have an impact on how the individual receives information. The study utilises the broader social ecological perspective, and particularly the SEMCHB as a framework for understanding and exploring the perceptions of learners.

The study made use qualitative data through focus group discussions, semi- structured interviews and participant observations to gain insights from learners. The study discovered that many incorrect perceptions about bilharzia still surround the learners. The perceived messages communicated through the DoH MTC still need to be communicated with learners, since some learners face challenges in understanding the preferred message. The encoding of the communicated messages through the poster, pamphlet and consent forms is influenced by the individuals social networks hence this study recommends that future communication message are designed with reference to the SEMCHB.

List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ARV	Antiretroviral
BCC	Behaviour Change Communication
CAT	Communication Accommodation Theory
CCMS	Centre for Culture and Communication Media Studies
CDT	Cognitive Dissonance Theory
DoE	Department of Education
DoH	Department of Health
EE	Entertainment Education
EST	Ecology System Theory
EPPM	Extended Parallel Process Model
FGD	Focus Group Discussion
FGS	Female Genital Schistosomiasis
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
HPV	Human papillomavirus
JEHSA	Johns Hopkins Health and Education South Africa
KZN	KwaZulu- Natal
MCPS	Multiple and concurrent partnerships
MTC	Mass Treatment Campaign
PAR	Participatory Action Research
PhD	Doctor in Philosophy
SA	South Africa
SCC	Social Change Communication
SCT	Social Cognitive Theory
SEM	Social Ecological Model
SEMCHB	Social Ecological Model of Communication and Health Behaviour
STD	Sexually Transmitted Disease
STH	Soil-Transmitted Helminths
TB	Tuberculosis
TTM	Theatrical Trans Models
UKZN	University of KwaZulu-Natal
USAID	United States Agency for International Development

VCT	Voluntary Counselling and Testing
WHO	World Health Organisation

List of Tables and Figures

Table 1: Interview and FGD study sample per phase for MTC material perceptions

Figure 1: The Social Ecological Model for Communication for Social and Behaviour Change.

Contents

Acknowledgements	ii
Abstract	iv
List of Acronyms	v
Chapter One: Background to the Study	- 1 -
Introduction.....	- 1 -
Unpacking bilharzia	- 2 -
Life cycle and transmission of bilharzia	- 2 -
Bilharzia: A global problem.....	- 3 -
Bilharzia in South Africa	- 4 -
Mass Treatment Campaign (MTCs)	- 5 -
The Department of Health Mass Treatment Campaign	- 5 -
Public Health and Communication	- 8 -
Biomedical Communication in Communities	- 10 -
HIV association with bilharzia.....	- 11 -
<i>Research Objective</i>	- 11 -
Structure of Dissertation	- 12 -
Chapter Two: Literature Review.....	- 14 -
Bilharzia and Mass Treatment Campaigns	- 14 -
Lessons from Mass Communication for Other Public Health Issues.....	- 16 -
Public Health Communication	- 18 -
Public Health Initiatives to Reduce Bilharzia	- 20 -
Public health education	- 22 -
<i>Educational communication materials for parents</i>	- 25 -
Locality of Mass Treatment Campaigns	- 27 -
<i>School-based project</i>	- 28 -
<i>Community-based projects</i>	- 28 -
<i>School-Community based projects</i>	- 30 -
Socio-economic factors influencing MTC	- 30 -
<i>Women's autonomy- who decides about participation in the MTC?</i>	- 30 -
<i>Economic stability</i>	- 31 -
HIV and AIDS Communication Strategies in Developing Countries.....	- 31 -

Conclusion	- 34 -
Chapter Three: Theoretical Framework	- 35 -
Sustainable Communication for Behaviour Change	- 36 -
<i>Behaviour Change Communication (BBC)</i>	- 36 -
<i>Social Change Communication</i>	- 38 -
Sustainable Biomedical Communications	- 40 -
Theories and models addressing change communication	- 41 -
<i>Exploring the Fear appeals</i>	- 42 -
<i>Extended Parallel Process Model: Understanding the reason for fear</i>	- 45 -
<i>Social Cognitive Theory</i>	- 46 -
<i>The Health Belief Model: Reasons behind health practises</i>	- 47 -
Background to the Social Ecological Model	- 49 -
<i>Levels of the Social Ecological Model</i>	- 49 -
The Social Ecological Model for Communication and Health Behaviour (SEMCHB)	- 51 -
Conclusion	- 55 -
Chapter Four: Research Methodology	- 56 -
Research Paradigm and Approach: Qualitative Action Research	- 56 -
Setting of the Study	- 58 -
Study Sample	- 58 -
<i>Selection of learners</i>	- 59 -
<i>Focus Group Discussions (FGD)</i>	- 61 -
<i>Semi- structured interviews</i>	- 62 -
<i>Participatory Observations</i>	- 63 -
<i>Secondary data</i>	- 64 -
Data Analysis	- 64 -
<i>Encoding and decoding of information</i>	- 64 -
Ethical Considerations	- 66 -
Limitations of the study	- 66 -
Validity of the study	- 67 -
Chapter Five: Results and Discussions	- 69 -
Section 1: Participants Reception of information materials and tools used during the DoH MTC ..	- 69 -
The information materials	- 69 -
<i>DoH MTC consent from</i>	- 69 -
<i>DoH MTC pamphlet</i>	- 71 -

<i>DoH MTC poster</i>	- 75 -
Communication tools	- 79 -
<i>The Assembly Meeting</i>	- 79 -
<i>The Classroom Talk</i>	- 81 -
<i>The Information Desk</i>	- 83 -
Section Two: Behaviour Change Communication: The role of social cognitive theories within the SEMCHB and SEM frameworks	- 87 -
<i>Cognitive Dissonance Theory</i>	- 87 -
<i>Health Belief Model</i>	- 89 -
Insights of learners	- 90 -
Fear appeals and self-efficacy	- 91 -
<i>The Value of Information within the Social Networks</i>	- 93 -
<i>Parent Communication</i>	- 95 -
<i>Impact of social networks</i>	- 96 -
<i>Learners Knowledge about Bilharzia and HIV</i>	- 99 -
<i>HIV Positive People Taking Bilharzia Treatment</i>	- 100 -
<i>Accepting the Information</i>	- 101 -
Conclusion of the study	- 102 -
<i>Distribution of written information</i>	- 102 -
<i>Visuals in the materials:</i>	- 102 -
Bibliography	- 104 -
<i>Internet Sources</i>	- 120 -
Appendices.....	- 122 -
Appendix 1: Map of South Africa.....	- 122 -
Appendix 2: Map of KwaZulu- Natal Province.....	- 122 -
Appendix 3: Map of Ugu district, KwaZulu- Natal, South Africa.....	- 123 -
Appendix 4: The Life Cycle of Bilharzia.....	- 123 -
Appendix 5: The DoH Consent Form.....	
Appendix 6: The DoH Pamphlet	
Appendix 7: The DoH Poster	

Chapter One: Background to the Study

Introduction

This chapter describes the study's location of the Ugu District in Port Shepstone, KwaZulu-Natal (KZN), South Africa (see appendix 1). It also explains the study's objectives in relation to bilharzia prevention and treatment communication. Public health communication and mass treatment campaigns are discussed to provide a broader understanding of the role being played by the Department of Health's (DoH) bilharzia mass treatment campaign (MTC) in the Ugu district. The study explores the insights of outsiders. The 'outsiders' of the project are the learners and those invited to participate in the Mass Treatment Campaign (MTC) but are not involved in the day to day planning of the MTC. The 'insiders' of the study are the DoH MTC staff who have planned the treatment campaign and the communication strategy used. This study seeks to explore the outsider's understandings and reception of the communication tools and approaches used to spread and share information about the MTC and the bilharzia diseases.

Port Shepstone has a rural to urban ration of (738:378) and the poverty rates in the rural area continue to escalate resulting in the underlying causes of health related problems (Ugu, 2011). The DoH's MTC is a biomedical intervention designed to improve health in selected rural areas of the Ugu District (see appendix 2). Biomedical interventions are used to improve public health in communities, yet communication remains an important factor in the acceptance of the intervention (Scalway, 2010). This study has an interest in understanding and exploring how communication strategies contribute to improving beneficiary participation in biomedical projects. The study examines the communication strategy used by the DoH MTC and the perceptions of school learners towards the communication materials used by the MTC to communicate with the learners in order to generate improvements for the current communication strategy.

The main purpose of the study is to present a document able to explore the influence and contribution of communication strategies embedded with a biomedical project. The review of the current information being distributed to learners will assist in understanding how learners receive the information. The arguments explaining the contributions of communication

strategies in biomedical intervention are made within the context of the Social Ecological Model for Communication and Health Behaviour (SEMCHB) (Kincaid et al 2007).

Unpacking bilharzia

The study focuses on the bilharzia disease which is endemic in KZN (see appendix 3 and is scientifically known as schistosomiasis. Bilharzia affects 300 to 700 million people globally (WHO, 2011). This neglected tropical disease is predominantly found in rural areas characterised by lack of clean water and adequate sanitation. The lack of tap water in rural communities has resulted in community members using river water which might be infected with bilharzia, thus increasing their chances of infection (van Bogaert, 2010). It is transmitted through skin contact with infested waters, which may be found in lakes, dams, rivers or streams. An estimated 85% of the people who require treatment are from Africa (WHO, 2011) and school going children who are exposed to contaminated freshwater sources are more vulnerable to being infected with bilharzia (Thomassen *et al*, 2010). The infection may result in adults suffering from chronic lesions as a consequence of childhood risk water contact (Kjetland, 2012).

Life cycle and transmission of bilharzia

The lifecycle of bilharzia is illustrated in appendix 4 showing humans' act as the primary host and the snail as the secondary host. When humans defecate or urinate in or alongside the banks of fresh water sources such as rivers, ponds, streams or lakes (Boissier *et al*, 1999), the worm eggs hatch in the water and mature in the snail. Once they have matured in the snail, larvae from the snail enter the human body through the skin (Boissier *et al*, 1999). Inside the human body the mature female and male schistosome join together and the female excretes eggs, which may remain in the human body but some are passed out through urine and faeces. The cycle replicates when a human urinates or defecates in or near fresh water sources (Boissier *et al*, 1999).

In South Africa bilharzia can be caused by the parasites *Schistosoma haematobium* (urogenital bilharzia) and *Schistosoma mansoni* (intestinal bilharzia). Bilharzia is prevalent in tropical and subtropical areas (Appleton *et al*, 2008) where the snail *Biomphalaria africanus* is the intermediate host for the schistosome which is responsible for urinary bilharzia in humans (Appleton *et al*, 2008). Symptoms such as blood in urine (haematuria) or pain when urinating (dysuria) are often associated with urogenital bilharzia. Re-infection occurs easily in endemic areas if the community at large is not treated. Untreated individuals that urinate or defecate in or near fresh waters have the potential of re infecting treated community members

(WHO, 2011). Infection rates have been shown to escalate during spring and summer since temperatures then are more favourable for the *B. africanus* snail which acts as the intermediate host for the schistosome (Rollinson *et al*, 2001). The disease is under-recognised and is a neglected disease although it can be treated with the drug praziquantel (WHO, 2011).

The DoH MTC aims to reduce the number of infected children and to increase the knowledge that the communities have regarding bilharzia. The DoH MTC seeks to increase the communities' knowledge about bilharzia through providing public health education and written materials; hence the study seeks to explore the perceptions of how the information is received by the public and specifically school-going learners. Bilharzia continues to be a global problem; the high prevalence in South Africa indicates the need for effective communication about prevention and treatment alongside the treatment distributed in the biomedical projects. The study assesses how the target audience perceive the information so that recommendations can be applied to provide material that the majority of the public (or target audience) can relate to and understand.

Bilharzia: A global problem

Bilharzia is known to be prevalent in more than 77 countries worldwide, although 52 countries have high prevalence (WHO, 2011). Countries in Asia, South America and Africa are affected by bilharzia (WHO, 2011). The intensity of infection varies with each region. The World Health Organisation (WHO) recommends that areas with high prevalence receive mass treatment at least once a year, although globally more than 230 million are in need of treatment (WHO, 2011). The parasite may cause chronic disease and can infect people of all age groups, although globally statistics have proven that, school going children have the highest prevalence of infection due to their high contact with infested waters (Ferreira *et al*, 2002).

Bilharzia often occurs together with the soil-transmitted helminths (STHs) and may reduce one's health quality and can lead to death, and Africa is highly impacted by such diseases (Ferreira *et al*, 2002). Globally, efforts are being made to decrease transmission (Ferreira *et al*, 2002). Snail control, improved sanitation, health education and oral drug treatment have been the main approaches to control bilharzia although recently more attention has been focussed on drug administration, health education and public health communication. Although this study explores a biomedical intervention in bilharzia treatment, the study is located within the field of public health communication as the MTC's communication

campaign is the focus of this study. The provision of oral treatment globally has increased from 12.4 million people to 33.5 million people during 2010 but there are still more people in need (WHO, 2011).

Bilharzia in South Africa

Urogenital and intestinal bilharzia are the main types that can be identified in South Africa, urogenital bilharzia is most common (Appleton & Naidoo, 2009). Urogenital bilharzia is prevalent in the KwaZulu–Natal, Mpumalanga, Eastern Cape, North West and Limpopo provinces. Intestinal bilharzia exists in parts of KwaZulu-Natal, Mpumalanga and Limpopo. South Africa has also experienced outbreaks areas in cities such as Port Elizabeth and King Williams Town, Eastern Cape (van Bogaert, 2010).

South Africa is considered a developing country and aims to improve public health services. Although there are efforts to improve water and sanitation, many rural dwellers are still exposed to infested waters. The water contact activities in impoverished areas have resulted in both adults and children being exposed to infested waters, thus compromising their health (Ellis, 2002). Mass treatment has not been offered although individual treatment is sometimes available at local clinics (van Bogaert, 2010) However, individual treatment in outbreak areas may not be enough to eliminate bilharzia in the area, since people are easily re-infected (WHO, 2011). When untreated infected people without adequate sanitation continue to use the rivers, they continue to expose the rest of the community.

Furthermore, in terms of the cost of the medication praziquantel, service providers reported “medication is extremely expensive in South Africa and the district health services cannot afford to keep up supplies” (Berge, 2011). The Ugu District is one of the areas where bilharzia is present and the DoH seeks to limit transmission and prevent outbreaks of the disease. The study seeks to explore if the communication approach used by the MTC is able to influence the acceptance of treatment by individuals, hence the study will review the information provided to the selected high school learners ranging from 15 to 25 years of age.

Mass Treatment Campaign (MTCs)

The recommendations on how to target MTCs differ and are determined by the prevalence of the disease in the area (WHO, 2011). MTCs offer mass distribution of drugs to a large population. In many cases MTCs are used to control and prevent transmission of diseases in an area. Countries such as Egypt were able to use mass media communication media such as radio and print messages to enhance the communities' knowledge about bilharzia. Egypt strategically used public health education and provision of free medication to improve the MTC at their schools (Watts & El Katshe, 1997). This strategy was successful and over a number of years lead to a great decline in the bilharzia prevalence and morbidity (Watts & El Katshe, 1997). In South Africa (SA) the law requires that medication should be distributed by health professionals such as nurses, doctors or pharmacists (DoH, 2004). The DoH MTC is a public health initiative which targets school going children. The DoH MTC might be aimed at school going children but programs are gradually involving other community members to participate in the MTC (Molyneux *et al*, 2005).

The Department of Health Mass Treatment Campaign

The MTC mainly targets school going learners from rural communities and is implemented in school premises during school hours. The project is a donor funded project that seeks to improve the health status of communities. Academic institutions such as the University of KwaZulu-Natal (UKZN) and Oslo University Hospital contribute through research and donor support. The project collects information related to bilharzia by recruiting postgraduate students from the development and medical fields of study to research particular aspects of the project.

The project recently recruited communication students to explore the communication aspects of the biomedical project. Data is also collected through consultations with nurses, teachers and learners and through questionnaires. The research assistants are responsible for collecting data through surveys and questionnaires and often the project visits schools to conduct interviews with learners. In the forefront it helps communities deal with the challenges and misconceptions of bilharzia whilst in the background it advocates for policy change relating to the distribution of bilharzia medication, namely praziquantel.

The DoH offer treatment to randomly selected schools, therefore not every learner in the community is exposed to information. The provision of treatment is primarily aimed at learners but also to the wider community that wishes to receive treatment. The project works with the South African DoH which operates in the Ugu District and participates in the

planning and implementation of the MTC. The DoH MTC aims to treat all selected schools in the Ugu District and to reach and maintain a coverage rate of 75% per school as suggested by the WHO (WHO, 2012). The DoH MTC has not reached the target number but learners continue to receive free treatment and health education with the aim to provide the best public health care services regarding bilharzia.

The project requires signed consent from participants of all ages in order to provide them with free treatment. Therefore, the number of consent forms returned may determine the number of people that will receive treatment from the DoH MTC. The consent forms are taken to the school by the DoH MTC team to every learner. The learner is requested to take the consent form home to obtain parental authorisation. The signed form needs to be returned to the class teacher and the team collects the forms from the school at a later stage. The DoH MTC tries to distribute the form more than once in each school, to encourage learners to participate in the MTC.

The DoH MTC communicates with the learners, teachers and parents prior to the MTC being implemented. Parents are informed through the consent form and by inviting parents to attend parents' meetings at the various schools. The researcher attended parents' meetings but observed that not all parents are able to attend the parents' meetings organised by the DoH MTC. As an additional measure the consent form is also meant to inform the parent but in some cases parents are unable to attend the meetings. Training is provided for all staff members to refresh and improve their knowledge; this strategy ensures that the employees send out effective and accurate information when communicating with the communities and learners.

Learners and school staff are reached through the following communication tools: posters, assembly meetings, class room talks and the distribution of pamphlets. The consent form (see appendix five), pamphlet (see appendix six) and poster (see appendix seven) do not necessarily include the same information. The pamphlet is the second most distributed information material in the MTC and has contributed to confusing the targeted market. It is distributed to the learners mainly during the information desk and any other opportunities the information team has with learners, school staff or parents. The pamphlet provides an explanation about the disease and uses visuals to depict how one can get and spread infections. It provides detailed information about the symptoms of the bilharzia and also the possible side effects of praziquantel. It is meant to provide information that will answer some

of the frequently asked questions and minimise people's concerns regarding bilharzia and the MTC. It is mainly targeted at learners and community members that are able to read and is distributed in the local language isiZulu, but the English version is also available. Contact details of the relevant stakeholders are available on the pamphlet and gratitude to stakeholders is expressed.

The poster designed by the MTC is 83 cm width and 80 cm length and briefly explains the life cycle of the disease and emphasises that the diseases is highly treatable. It is distributed to primary and high schools. It is then pasted on school walls that are accessible for learners. An assembly meeting is a process whereby all the learners in the school are organised and required to gather in a designated area, so that they can be addressed by the school staff or external visitors. Whilst a classroom talk involves the DoH MTC which visits a school and addresses learners class by class, providing them with the information about the MTC and bilharzia. The duration of a classroom talk is approximately five to eight minutes per classroom.

The information desks are mainly aimed at learners from different backgrounds and seek to provide learners with an opportunity to learn about bilharzia and the MTC. The information desk is a procedure whereby the DoH bilharzia MTC team provides information to learners during break time at the school premises. The break times differ hence an information desk is approximately 45 minutes to an hour. The bilharzia information team is mainly responsible for conducting the information desks at school. The information desk was manned by 2 – 4 extrovert people 'the information team', usually members were below the age of 25, most often of several races and nationalities, most often they were university students dressed in navy t-shirt written "free bilharzia treatment". To attract the attention of learners sweets are distributed. The handing out of sweets has created additional interest, since learners are willing to listen to the information so that they can receive a sweet. It has been recommended that incentives be given to the learners to try and encourage participation during the information desk and MTC, although previous campaigns have experienced problems when issuing incentives for participation purposes.

This study received academic support from the University of KwaZulu-Natal and the Oslo University Hospital. This study is embedded within the Norwegian / UKZN medical project that provides academic support for the DoH MTC. Studies supported by the partnership between UKZN and the Oslo University Hospital aim to gather information to improve the

effectiveness of the MTC, hence this study considers the perceptions learners have towards the DoH MTC communication strategy. The DoH MTC considers applications from international students at a postgraduate level to gain practical and academic experiences, by providing academic support and the availability of a functioning programme for a student to be able to gather data. The experiential learning process allows the students linked to the project to partake on the day to day planning and implementation processes of the MTC.

The DoH MTC operates in predominately black rural communities and not many of the learners are exposed to the international students. The researcher observed that the presence of the international students which joined the project and attended the information desk seemed to be able to generate 'hype' and lead to more discussions in the school playgrounds. The various communication approaches have been used to try and accommodate age groups and try to ensure that majority of the school has been informed about the MTC and that treatment for bilharzia is available. These efforts can thus be considered as part of public health communication on bilharzia in South Africa.

Public Health and Communication

Public health institutions aim to improve health outcomes and to ensure accessibility to optimum health services regardless of location and make an effort to ensure that people are informed and aware of the latest knowledge, available treatment and resources (Walley *et al*, 2001). The DoH assumes the responsibility to protect, prevent and reduce illnesses in society (DOH, 2004). These goals are partly achieved through communicating health information and encouraging positive behaviour changes that are of benefit to people themselves and the community (Ndiaye *et al*, 2003). Actions, behaviours and beliefs impact on the health decisions made by individuals (Bandura, 2004). Public health institutions intend to identify leverage points that create opportunities to improve health conditions and the quality of life. The field of public health includes mental and physical diseases including health topics such as malnutrition, vector borne diseases, water borne diseases and vaccine preventable diseases (Chatters *et al*, 1999). Communication has become a necessity in sharing facts that can enhance the quality of health. The DoH MTC, unable to reach everyone, therefore has to depend on the possibility of learners informing each other.

Public health communication is defined as one group attempting to change other groups' beliefs or behaviours (Dutta-Bergman, 2005). Albert Bellg and Belinda Borrelli (2004) state that it is a dynamic process that involves an exchange of information via interventions which

aim to create change. Public health *communication* is used to start dialogue in relation to health issues amongst people from various health disciplines and assist in saving lives [my emphasis]. Public health *education* is then used in conjunction with drug administration to reduce the prevalence of schistosomiasis (Appleton *et al*, 2008) [my emphasis]. This study will focus on the communication approaches used to educate the public on bilharzia prevention and treatment in Ugu District. The study takes into consideration school learners' perception of the MTC and the ways in which they are influenced by their community and the social groups with which they interact. The study uses the social ecological perspective that involves the "investigation of relationships between individuals and their environments" (Richard, 2010:309).

Theoretical approach to Public Health Communication and the Study

For the past 60 years social scientists have advanced various theories and models of how communication can influence behavior. This study is approached from a social ecological perspective (Sallis *et al*, 2008; Storey & Figueroa, 2012) and the Social Ecology Model of Communication and Health Behaviour (SEMCHB) (Kincaid *et al*, 2007) will be used as the framework for the study as various behaviour and social change theories and models are included within this meta-theory. These levels include the individuals, community, social networks, community and society. The SEMCHB becomes relevant to understand and analyse situations relevant to change communication (Kincaid *et al*, 2007). The SEMCHB framework highlights the relationship and influences on an individual person's behaviour and the associated theories, such as Health Belief Model (HBM) (Stokols, 1996) or the Extended Parallel Process Model (Witte, 1992). The model acknowledges information and the manner in which information is received is impacted by the physical environment and infrastructure.

The study is limited to exploring the individual, community and social network levels of the SEMCHB since exploring the societal level that includes issues such as national leadership, health policy and advocacy is beyond the scope of this master's study. The SEMCHB will assist in exploring how interpersonal relationships amongst learners influence the success of MTC through conducting semi-structured interviews and focus group discussions that will explore interpersonal, individual and the social networks of the learner.

Public health communication initiatives have greater success rates when strategies are continuously reviewed and processes and recommendations are implemented (Dutta-Bergman, 2005). Participatory Action Research (PAR) (Greenwood *et al*, 1993) is part of the

study since the study continuously gathered information about the MTC (Kock, 1998), and recommendations were adjusted to the information which is currently distributed to the public during the MTC. The adjustments are expected to make the materials more relatable and understandable.

Biomedical Communication in Communities

Community members need to be aware of biomedical interventions being implemented in their communities. Communication during the MTC becomes essential, since it can be used to gain the approval of community members. Biomedical interventions in communities that lack the support of the community are not often successful due to lack of participation (Scalway, 2010). Communication plays a key role in ensuring that the various stakeholders are supportive of the intervention and are aware of the activities taking place in the project (Thorne *et al*, 2005). Poor communication with community members often results in misconceptions about the intervention in communities (Thorne *et al*, 2005). Thomas Scalway argues that communication in biomedical interventions that are aimed to stimulate sustainable behaviour change should send out messages that are effective and relate to the targeted audience. The reach of communication should be at least 90% of the targeted population. The majority of the population in South Africa is exposed to at least one method of communication, and utilising a combination of methods improves the reach (Scalway, 2010).

Scalway (2010: 5) further states:

While the reach of mass media communication on HIV may be around 90% in countries such as South Africa, the fact that 90% of the population is exposed to at least one mass media HIV prevention intervention is no reason for complacency. All the evidence suggests a high dosage of media exposure over a sustained period garners the most significant results

The DOH MTC uses different communication approaches to inform people about the MTC. This study will explore the target audience's most preferred communication approach, considering their infrastructure and physical environment. The SEMCHB indicates that the infrastructure and communities physical environment impact how messages are perceived by the audience thus influencing their decision making process (Kincaid *et al*, 2007). Therefore, the study will be aware of the location of the schools invited to participate, so that it can investigate perceptions from individuals with different infrastructural and physical environments. The physical and infrastructural environments contribute to the access of

information; hence the study explores learner's information pertaining to the association of HIV to bilharzia

HIV association with bilharzia

South Africa has a high HIV and AIDS prevalence. Ten percent of the population is HIV positive (Stats SA, 2010). KwaZulu-Natal province, where the project is based, has the highest HIV and AIDS prevalence in the country. In the year 2008 a total of 15.9% of the population 15 – 49 year old was HIV positive. HIV and AIDS research and public health information rightly receive a tremendous amount of attention and funding (England, 2007). Public health communication may be used to share the research that exists about HIV (England, 2007). It may also be used to share various initiatives such as encouraging people to be willing to start discussions related to HIV and AIDS.

Genital bilharzia has been hypothesised to increase the risk of contracting HIV since genital bilharzia creates lesions that may bleed during intercourse thus creating entry points for the HIV (Kjetland *et al*, 2012). A combination of *S. haematobium* and HIV may cause untoward suffering especially in developing countries (Kjetland *et al*, 2012). Bilharzia treatment using the drug praziquantel has been shown not to have any negative impact on HIV treatment; both treatments can be taken by the patient at the same time (WHO, 2011). The WHO suggests that bilharzia treatment should be offered to HIV positive people in endemic areas and people with other chronic diseases (WHO, 2011). The study will explore the perceptions regarding bilharzia and HIV and the knowledge that exists around the willingness of taking bilharzia treatment even if you are HIV positive or have other diseases.

Research Objective

The study assesses how learners attending high school understand the information provided to them about bilharzia by the MTC. This study seeks to explore whether learners are able to relate to the information given to them by the MTC in terms of whether it is sufficient or understandable. Exploring the learners' perceptions of the information materials (consent form, pamphlets and poster) will assist in identifying aspects that require improvement. Learners will be invited to investigate the information materials in three phases, as will be described in Chapter Four.

The study will explore perceptions about the need for treatment and the process of treatment at school. The perceptions of how learners relate bilharzia and HIV will be gathered in order to try and understand the knowledge that learners have regarding HIV and bilharzia. It is

hoped that the information will provide insight and recommendations will be implemented as the study proceeds.

The study's overall aim is to investigate the MTC communication strategy for schistosomiasis prevention in Ugu District, South Africa of the information materials in order to support the communication strategy of the DoH MTC. In order to conduct the investigation the study seeks to explore how the target audience receives the information that is provided prior to and during the mass treatment campaign.

Structure of Dissertation

The second chapter provides an overview of literature regarding public health communication and examples of medical mass treatment campaigns. The chapter further makes comparisons of various public health communication interventions implemented across the globe. MTCs and factors such as the locality of the MTC, and the inclusion of parents in the MTC that have the potential to influence public health communication strategies are explored in order to understand the role of public health communication in MTCs.

The third chapter provides the study's theoretical framework offered primarily through the lens of the social ecological perspective (Sallis et al, 2008) and extends to further explore how the SEMCH becomes useful when understanding the influence of the community and social network relationships upon individual behaviour change (Kincaid et al, 2007). The environment and infrastructural resources contribute to the success of the communication strategy being implemented in community interventions. The chapter further elaborates as to how behaviour change and social communication theories guide the study.

The fourth chapter delineates the study's methodological approach and research design and elaborates on how data were analysed. The study utilises the action research approach. It incorporates the responses of previously interviewed participants. It provides a detailed motivation for the use of focus group discussions, participatory observations and semi structured interviews. This chapter further explains the limitations and validity of the study.

The fifth chapter indicates and discusses the results obtained from the study. The chapter further groups the information into two sections. The first section provides an overview of the learners' reception of the information materials and communication tools used during the DoH MTC. The second section of the results and discussion focus primarily on the behaviour

change communication aspects of the study, further exploring the role of social cognitive theories within the SEMCH and SEM.

The sixth chapter concludes the study. The conclusion will provide a summary of the results, the recommendations and weaknesses identified by the target audience.

Chapter Two: Literature Review

Introduction

The chapter aims to provide an overall review and comparison of various public health communication strategies used to provide health education. The chapter further explores how public health communication strategies contribute to biomedical studies such as the DoH MTC and examines the influence of the communication tools used to communicate with the public. The concepts of bilharzia and MTCs are examined to enhance one's understanding of bilharzia and MTCs. Furthermore the literature discussed includes the relevance of parent literacy and social factors in public health communication strategies and MTCs. The chapter concludes its discussion by reviewing how HIV and AIDS communication strategies in developing countries have influenced public health literacy.

Bilharzia and Mass Treatment Campaigns

Schistosomiasis, commonly known as bilharzia, is the second most common parasitic disease in developing countries after malaria and affects 300 to 700 million people (Abebe *et al*, 2003). It is endemic in 75 countries and there are various recognised types of bilharzia such as *Schistosoma haematobium* (urogenital bilharzia) and *Schistosoma mansoni* (intestinal bilharzia) (WHO, 2011). Although the various types of bilharzia are comparable in the way in which humans are infected, they have unique transmission cycles and symptoms since the worms from the snail may lay eggs in various parts of the body (El-Sherbini *et al*, 2009).

The South African Department of Health (DoH)'s Mass Treatment Campaign (MTC) aims to provide treatment for a large number of people in the Ugu District to reduce the number of infected school going children in the selected schools in the Ugu District, and increase the community members' knowledge regarding bilharzia (Lothe, 2012). Treatment is advised in younger children, since a study conducted in Zimbabwe indicated that lesions that may result from bilharzia infections may be untreatable in adults. Therefore, it has been suggested to begin in young children to try to prevent lesions and bilharzia symptoms (Kjetland, 2012).

Globally MTCs have been used as a measure to deworm the community, whether it is deworming for soil transmitted helminths or for bilharzia. Studies done in Africa have confirmed that deworming in masses decreases the prevalence of bilharzia in that particular environment (Ni, 2006). Countries such as Uganda, Burkina Faso and Brazil often combine

mass treatment for bilharzia with mass treatment for soil transmitted helminths through school programs targeting children of 15 years of age and younger. The support of donors such as the World Health Organisation (WHO) makes it possible for low income countries to improve the health status of their people. The WHO advises that countries with elevated prevalence provide mass drug administration once a year for a period of at least five consecutive years to minimise re-infection (WHO, 2011). Mass treatment varies for each country and can be regulated by the health policies implemented by the DoH. Mass treatment is implemented based on the intensity and prevalence of infection (WHO, 2012). The higher the infection rate the more frequent mass treatment is recommended (Ni, 2006). It is advised that before a MTC, baseline studies that make use of focus group discussions, community meetings or orientation workshops to introduce and explain the study and processes that will take place in the community be implemented (DiCicco-Bloom, & Crabtree, 2006).

Countries are able to learn from previous MTC experiences in other countries but adaptation needs to be accounted for. Strategies used should be flexible and take into consideration factors such as culture, socio-demographic factors, and women's autonomy and disease patterns within a particular country (Riddiough, 1981). The capacity building of community members may potentially serve as a measure of improving participation during the MTC and assist relevant stakeholders to be accountable for the biomedical intervention in their community. Therefore this study investigates whether the relevant stakeholders such as parents or guardians receive the necessary information and their reactions towards the information. The WHO promotes the facilitation of stakeholders to partake in active roles that encourage and promote the campaign (WHO, 2012). Such stakeholders may be accountable in ensuring the evaluation of the campaign so that the campaigns intentions can be realised.

Praziquantel, the commonly used medication for treating bilharzia, has been noted to be highly efficacious in deworming for bilharzia (Berge *et al*, 2011). The single dosage drug is considered to be safe for people of all ages and including HIV positive people, although seriously ill people should be excluded from large scale treatments (WHO, 2011). Studies conducted concerning the side effects of praziquantel show no influence on miscarriages, still births or birth defects and may safely be taken by breastfeeding and pregnant women (WHO, 2012). Patients receiving the medication should be informed about the possible minor adverse conditions that may occur. These are estimated to last at maximum a few hours (WHO, 2012). It has been recommended that participants who experience adverse conditions should be monitored and coping strategies should be in place (WHO, 2012). The drug has not proven

to be harmful and comes highly recommended by the WHO. The study explores safety perceptions of the drug and whether information pertaining the safety and possible adverse conditions are included in the mass communication tools used to communicate with the learners

Lessons from Mass Communication for Other Public Health Issues

Mass communication is aimed at addressing people at large and may utilise various resources used to endorse health messages such as anti- tobacco, sexual behaviours, road safety or disease management and control, to attract an audience (Gromet *et al*, 2005). It makes use of audio mediums such as radio and television, and non-audio mediums such as newspapers, books, billboards or pamphlets to diffuse information that purposively influences an individual's opinions (Emerson *et al*, 2008). Public health messages sent out through mass media seek to promote positive messages (Emerson *et al*, 2008). Mass media communication may inform people but may not always be able to achieve behavioural change; hence personal communication complements mass media mediums (Clark & Fletcher, 2003). Visual and written communication tools aim to improve the transfer of information in public health campaigns (Aspergren & L LÃnberg-Madsen, 2005). Communication becomes effective once both the receiver and sender fully understand each other and find the communication process meaningful (Hall, 1980). This can be achieved if there is allowance for feedback. A lack of communication between individuals or within organisations often results in disputes and conflicts (Figuerola *et al*, 2002). A MTC may have poor participation due to people not being appropriately informed about the treatment campaign (Aspergren & L LÃnberg-Madsen, 2005). One of the reasons for reviewing the communication materials used by the information team of the DoH MTC is to ensure that people have sufficient and accurate information.

Soil transmitted helminths (STH) are prevalent in developing countries characterised by poor sanitation or hygiene practises and affect more than one people globally (WHO, 2011). They are easily transmitted through contact or consumption of infected materials (Parker & Allen, 2011). For decades treatment has been offered through mass drug administration or more intensively through chemotherapy (Parker & Allen, 2011). Similarly to bilharzia re-infection occurs easily and treatment for STH is often targeted to school going children, since they are at a higher risk (Parker & Allen, 2011). A campaign in the Philippines identified the need for public health education to compliment mass drug administration (Bacon *et al*, 2012). The continuous re-infections in communities highlighted the need for public health education

which communicated methods to prevent re-infection in the community (Bacon *et al*, 2012). Conducting health education before providing the community with treatment made the community members more aware of the practices they can adapt to minimise re-infection. The positive attitude of the health and education officers within the project assisted in conveying the message to the public. The use of posters, television adverts and short messages systems (sms) on cell phones assisted in spreading public health messages (Bacon *et al*, 2012). This act resulted in decreased rates of rapid re-infection and more community members became conscious about the desirable behaviours which will assist them in lessening the re-infection of STH's (Bacon *et al*, 2012). The DoH MTC provides learners with information before the treatment is distributed. This study explores whether learners are able to understand the information about the MTC and bilharzia.

Ghana made use of public health education to improve public health communication and health literacy so that community members were able to understand the importance of the information and how the information can potentially influence their lives. The provision of study guides was the main approach used to inform people about the disease (Mogford *et al*, 2011). In addition to the study guides, personal conversations with the people were used to inform people about the disease and how they can cope with the disease. Further personal communication was used during treatment (Parker *et al*, 2008). Communication should increase awareness about the topic and provide information during treatment to encourage people that were not willing to take part in the treatment to participate (Parker *et al*, 2008). Successful communication strategies differ in each country and the majority of developing countries in Africa are influenced by culture and religion, which impact on their belief and value systems (Resnicow *et al*, 1999).

Mass communication interventions should take account of culture and religion (Sallis & Owen 2002). The social ecological perspective for example, suggests that the public's culture or religion be accommodated by planning interventions that acknowledge the importance and interrelatedness of various hierarchical systems (Storey & Figueroa, 2012). Communication strategies ought to provide information that can potentially influence the beliefs and value systems of communities (Storey & Figueroa, 2012), and to a certain extent the societal network of the SEMCHB (Kincaid 2007). High participation rates of at least 75% are the aim in a MTC, but negative perceptions and beliefs may hinder the participation of community members (Resnicow *et al*, 1999). This highlights the need of communicating accurate and appropriate influential messages to the community (Valente, 1998).

Radio is one of the oldest methods of communicating and has been undergoing continuous improvement (Valente, 1998). Currently it is considered to be more interactive in exploring opinions and the ideas of the people listening to radio. Mass media has improved coverage rates incredibly in the Philippines, where people are encouraged through radio to participate (Valente, 1998). Electricity is a scarcity in some developing country communities such as South Africa, Ghana and Nigeria reducing the use of electrical appliances. Radio is one of the oldest communication technologies, and is highly utilised in such areas, since they have the option of using batteries (Shier, 1996). Radio communication is able to capture the listeners' attention in their native language whilst they are doing their day to day activities (Olorunnisola, 2002). In Ghana, radio was considered as the most practical mass communication tool regardless of the fact that some individuals may not have ownership of a radio but they did have access to radio, since they were able to access radio communication through listening with their neighbours or during a transport trip. (Hartgers *et al*, 2008).

Television or video mass communication may be impractical in rural and remote rural areas since people may not own televisions and videos machines (Wakefield, 2005). Literacy levels in rural areas may be lower than in urban or peri-urban areas. Mass communication for bilharzia public health communication through radio or written communication channels will help to inform the community at large about the disease, symptoms, desired behaviour change actions and importantly treatment, thus minimising the spread of incorrect information.

Public Health Communication

Health inequalities are commonly found in developing and underdeveloped countries and they may be due to causes such as poverty and lack of sufficient resources (Nutbeam, 2000). Public health communication should provide understandable information and can be defined as the science that protects and improves health practices through improving health education, promoting healthy lifestyles and increasing and sharing health knowledge in communities (Jorm, 2000). Public health communication regarding bilharzia plays a role in improving the knowledge that people have regarding bilharzia. Areas that have disease epidemics such as bilharzia or malaria often attract public health services that offer or provide health education, medication or infrastructure to decrease the spread of the disease in the area (Appleton, 2008).

Strategies to control and prevent the spread of bilharzia have made use of public health education (Cetron *et al*, 1996). These strategies have placed great influence on emphasising the prevention of bilharzia. Provision of public information to improve public health communication is a method that has allowed community members to verbally interact about how bilharzia can be controlled and prevented. Information provided should empower people to take the initiative to involve themselves in public health programs implemented in their communities (Parker *et al*, 2008). A sense of ownership in bilharzia health programs encourages participation but also leads people into a phase whereby they become more aware of the potential damage the disease can cause (Parker *et al*, 2008). Ideally it is hoped that in the future community members will take the initiative to adapt behaviour changes that will promote awareness and the prevention of the diseases and facilitate in other community health initiatives (Garba *et al*, 2006).

Public health communication models still have the role of ensuring that the targeted public has accurate information that will encourage them to apply the knowledge gained to control and prevent the spread of bilharzia (Garba *et al*, 2006). Good sanitation practises are essential when reducing bilharzia infections. An Egyptian study found that good hygiene and sanitation may result in decreased bilharzia infections (Molyneux *et al*, 2002). Egypt combined the promotion of hygienic sanitation and how to prevent and control bilharzia and as a result was able to reduce bilharzia in that country. Therefore, public health communication for bilharzia has a role in empowering individuals with the knowledge and skills that they can use to control and prevent bilharzia in their communities.

Public health communication is extensively used in various medical fields such as oncology and infectious diseases to improve knowledge about the disease and create awareness. Bilharzia remains a big problem in the public health sector (Cetron *et al*, 1996). Developing countries such as the Philippines and Uganda for example suffer from high prevalence of bilharzia. Sharing information about the disease is one of the most extensively used control methods to reduce the infection rate of bilharzia (Molyneux *et al*, 2005). Health communication may be influenced by cultural patterns such as beliefs, value systems and social norms in communities (Riddiough, 1981). The manner in which an individual perceives and acts on information is affected by these factors (Vlassoff & Bonnilla, 1994) and levels of influence (Kincaid *et al* 2007).

The channels for communication in developing countries may be improving although old methods such as word of mouth or telephone are still widely used (Dutta-Bergman, 2005). Different generations communicate in different ways; therefore communication practitioners need to ensure that the channels of communication used to spread information are appropriate for the targeted audience (Nutbeam, 2000). Usage of appropriate communication channels increases the opportunity of people hearing and understanding the message. Information should not only be accurate but it should be understandable. For example when communicating with illiterate senior adults one may use charts to enhance and accentuate their messages (Keys, 1995). A background study done within the frameworks of the DoH MTC revealed that a vast number of parents in the rural communities have low levels of literacy, hence the study will be aware that some learners may read the information materials to their parents before they sign (Lothe, 2012).

The sensitive nature of public health information may vary since some information is targeted at a community whilst other information may be targeted at individuals (Nutbeam, 2000). Information that promotes awareness of a particular disease may be channelled through mass or group communication. HIV and AIDS public health communication is mainly communicated through mass media and print publications, although the counselling is done on an interpersonal level for confidentiality purposes (Miller *et al*, 1998). The counselling information is more directed at the individual and is highly dependent on the status of the individual, hence the need for privacy (Miller *et al*, 1998). Mass communication should not invade people's privacy and bridge confidentiality boundaries (Brownell *et al*, 1983).

Public Health Initiatives to Reduce Bilharzia

Many of the people living in African countries are highly dependent on agriculture as a livelihood (Fenwick *et al*, 2005). Agricultural livelihoods that utilise water from untreated rivers, dams or ponds which may be infested with bilharzia place farm workers at a risk of being infected with bilharzia (Fenwick *et al*, 2005). Farm employees working in rice fields are highly exposed to waters that may be infested with bilharzia. In China, health communication and education is often provided to farm workers so that they can know what to do if they get infected with bilharzia. The strategy used to encourage farm employees to get treatment was to emphasise that treatment is cheap and easily available if you think you have bilharzia (YI-XIN & Manderson, 2005). Emphasising the “cheap price” of the treatment became the main reasons for farm workers receiving treatment. The strategy focused on

highlighting the price, since background studies revealed that people do not have enough money to buy medication (YI-XIN & Manderson, 2005).

In the 1980s the Pakistan health ministry suffered from many disease outbreaks which lead to the government revising the approaches they used to address health issues in the country (Shaikh & Hatcher, 2005). The revised strategy allowed the government to focus primarily on the provision of economic, social and community services which lead to a decrease in the number of people requiring immediate health services. The budget for economic and community development was increased and less funds were invested in the health care sector (Shaikh & Hatcher, 2005). Reducing the number of people that required health services provided the government with an opportunity to improve their current health and public health services. The enhancement of social and community services empowered people to gain more information on health topics such as family planning and immunization (Shaikh & Hatcher, 2005). Rural communities benefited from the strategy by gaining literacy skills that allowed them to read the health materials. The strategy implemented in the Pakistan health ministry was able to decrease the number of people infected with bilharzia. The project was a success in some areas of the country, but challenges such as accessibility to the remote rural communities and delays in the implementation of social and community interventions caused delays in the project reaching its ultimate goal of improving public health, and achieving good behaviour change in communities (Shaikh & Hatcher, 2005).

Bilharzia health education and communication is used to decrease the activities that increase infection rates through urinating or defecating in rivers (Sallis & McKenzie, 1991). In Botswana public health initiatives were used to explore and explain the snail distribution and abundance in wetlands (Ali *et al*, 1989). The initiatives allowed farm workers and the community residents around the wetlands to be more conscious about their water activities, through providing them with awareness, prevention and coping information about the disease. The strategy used gathered the information that farm workers knew about bilharzia and further explored the farm worker's perceptions of the behaviours and practises that can be adapted to prevention infection (Ali *et al*, 1989). The consciousness was raised through the interactive discussions amongst that farm workers and community residents. When the community understood the transmission cycle of bilharzia they became more conscious of the possibility of infection and considered adopting new behaviours that would reduce potential infection (Appleton, 2008).

Word of mouth has been used as one of the means to transfer information regarding public health (Botros, 2005). Word of mouth has contributed in encouraging individuals to visit each other's households and discuss the public health challenges that they face in their current societal and economic situations (Botros, 2005). Public health communication initiatives should not only consider the health of the individual. The communication initiatives should consider including influencing factors such as culture, value and belief systems (Mogford *et al*, 2011).

Medical and health professionals working in rural communities in KZN have recognised bilharzia as a primary health problem that mainly affects communities that rely on river water for water activities (Shackleton *et al*, 2001). Previously snail control had been an option to control and prevent bilharzia in countries such as Burkina Faso, Mali and Niger (Garba *et al*, 2006). Snail control was implemented by means of controlling molluscicidal plants although the strategy was not very successful, since many of the molluscicidal plants did not survive well in the climate (Clark *et al*, 1997). In KZN previous implementations acknowledge that the Zulu culture makes use of traditional knowledge and medicines (Fennell *et al*, 2004). Therefore the strategies used acknowledged the community members and added on to the information they had instead of criticising traditional knowledge and medication (Fennell *et al*, 2004). South Africa has not implemented a national MTC for the control and prevention of bilharzia, although research has been done on bilharzia (Mosam *et al*, 2009). The Ugu district seeks to undertake an initiative to control and prevent the spread of infection of bilharzia through the mass treatment campaign. The study is aware that individuals may choose to use traditional medicines but the DoH MTC has the responsibility to offer to educate individuals with scientifically proven medical facts to improve the individual's health literacy.

Public health education

Health education is one of the most commonly used methods to control and prevent the spread of diseases (Riddiough, 1981). The role of public health education is to educate and improve the information that people have about health and diseases and the strategies associated with preventing health diseases. Public health education also plays a role in improving the quality of life by providing health education services to the public (Chatters *et*

al, 1998). Messages promoted during public health education should enhance the awareness of prevention and control methods of that particular disease.

Health education is available for almost all diseases, and it can draw from global experiences, so that everyone can learn from what is happening globally (Basch, 1987). It provides education that draws from fields such as medical science, psychology or social science to promote health and prevent diseases (Keys, 1995). It makes use of various learning styles and experiences which are able to relate to the socioeconomic environments of the community (Cropley, 2004). Therefore, to limit the number of people infected and affected by bilharzia health departments and communities should implement public health education programs and improve the community's knowledge, skills and behaviours regarding bilharzia.

Public health education provides the audience with an opportunity to gain more information about a disease (Room *et al*, 2005). It is not always easy to determine the results and effectiveness of public health education especially if there is stigma involved (Kalichman & Simbayi, 2003). Cases have been reported whereby the audience has had the opposite reaction to the message being communicated through the communication campaign. HIV and AIDS is a stigmatised disease and as a result HIV positive people may fear being discriminated against if they disclose their status to people (Nicoll & Hamers, 2002). Reports of inhumane activities such as people being stoned, beaten or killed have contributed to people not disclosing their status and not wanting to seek assistance (Nicoll & Hamers, 2002). The success in encouraging people to take the antiretroviral (ARV) treatment was hindered by the negative stigma that surrounds HIV and AIDS (Nicoll & Hamers, 2002). The fear of people being seen taking the treatment contributed to people not taking the treatment (Weinberg, 1998). Continuous evaluations of public health education campaigns assist facilitators to identify weaknesses in their strategies and allows them to make recommendations to improve the current and future campaigns (Room *et al*, 2006). Thus public health education campaigns for bilharzia require a constant review of the communication tools used to communicate with the public.

Public health education is most successful when facilitated and implemented by specialised and trained professionals, but can be introduced by others in one's social network (Cropley, 2004). Public health education for bilharzia works best when facilitated by trained individuals that have accurate and sufficient information about the disease (Cropley, 2004). The trained individuals should have an understanding of the factors that affect the community

environment and the social issues around bilharzia. Public health education can be conducted in various places which are suitable to the target audience. Locations such as schools, clinics, public community halls, companies, universities or government agencies can be used to facilitate bilharzia public health education campaigns.

The majority of bilharzia MTCs were aimed at school going children. Including public health education on bilharzia in schools thus allows public health practitioners to attract a larger audience (Garba *et al*, 2006). The use of verbal and non-verbal communication to implement public health education has been useful, since not all learners are able to verbally communicate effectively due to factors such as poor literacy or the reading development disorder, dyslexia. Therefore public health education campaigns that seek to promote bilharzia awareness should include verbal and non-verbal communication, to improve the audience's knowledge (Garba *et al*, 2006).

Mass treatment for bilharzia is commonly combined with health education which promotes behavioural changes concerning disease and habits that can harm your health (Chatters *et al*, 1998; Nutbeam, 2000). Education that seeks to develop an individual's skills, knowledge and positive thinking about health related issues tends to have a stronger influence in behavioural change in the community (Cropley, 2004). Public health education initiatives further aim to influence working and living conditions that influence health. Public health education initiatives are sometimes able to pick up public health challenges being experienced by the community through participative observations and engaging in community activities whereby community members express themselves. Therefore practitioners are able to make recommendations to improve the health status.

Disease control and prevention methods used to reduce neglected tropical diseases may vary. Malaria is the most common tropical disease in Africa (Cropley, 2004). Public health interventions are being used to try and decrease the infection rates of malaria (Cropley, 2004). Globally, prevention and control methods are moving away from parasite control through pesticides, but rather to promoting positive health behaviours that encourage behavioural changes within individuals (Shaikh & Hatcher, 2005) via communication. Young children in Central Africa are highly impacted by malaria, and the national ministries of health in Niger have put great emphasis on public health education for mothers and women (Ndiaye *et al*, 2003). Studies show that providing mothers with visual and written (pamphlets with pictures) materials that will make them want to seek professional help will lead to more

children being treated. Encouraging mothers to seek treatment is important since they have the potential to influence their children and extended family members to take their required treatment (Ndiaye *et al*, 2003). Public health workers have the responsibility to ensure that they produce communication materials that the women and mothers are able to understand (Craig & Flora, 1988). Failure in understanding the information may result in children not being encouraged to take the treatment.

Public health education may seek to explore the working and living conditions that promote the disease spread, such as sanitation and water infrastructure. Health practices can be influenced by the community. Returning to the value of this study's theoretical framework, the SEMCHB (Kincaid *et al* 2007) shows how the community can influence an individual's behaviour and response to situations, and how an individual's response can have an impact on the community (Fleury & Lee, 2006). Squatter camps and informal settlements are often characterised with poor sanitation practices (Saff, 1996). Therefore, in these areas bilharzia may be more likely to spread easily. Public health communication campaigns must thus consider the influence that context may play on individual health behaviour.

Social and demographic factors have a significant influence on public health education and literacy levels (Riddiough, 1981). Communities characterised by escalating poverty rates are also associated with low education and literacy levels (Craig & Flora, 1988). Poverty has resulted in many people not being able to afford basic resources such as food and health resources making the option of using private health care almost impossible (Molyneux *et al*, 2005). Unaffordable private health care services have resulted in inequalities in the health system. In developing countries private health often includes advanced technology and is more efficient compared to the public health services (Mogford *et al*, 2011). Public health care services are often underestimated because of the poor service delivery. It is claimed that many of the employees in the public health sector are either incompetent or lack the required skills to perform their duties (Mogford *et al*, 2011). Therefore, public health employees should have the skills to transfer information preferably through participatory approaches that will result in improved literacy levels and behaviour changes (Mogford *et al*, 2011).

Educational communication materials for parents

Parents are considered as stakeholders when implementing MTCs and the need for parent involvement is encouraged to assist in increasing participation rates in MTC. The necessity to

provide parents with accurate and understandable information contributes in gaining the support and trust of the parents.

Research that requires consent from parents has the ethical responsibility to provide parents with accurate information about the study (Zawistowski & DeVita, 2004). Parents require simple and informative communication materials that they can understand (Riddiough, 1981). Non-formal learning environments may make the parents more willing and comfortable to participate in the learning. However, involving parents and learners together in health education may create complications. Since parents may have more information than the learners and if parents attempt to answer the majority of the questions, this may cause limitations in the learning processes for the learners (Bandura, 2004). Thus the DoH MTC offered both verbal and non-verbal communication to both learners and parents at different times and venues.

The use of a combination of methods such as using written and oral communication (for example using booklets and videos clips) in communicating messages increases the chances of learners hearing and understanding what is said (Jorm, 2000). It is more effective to use more than two approaches to communicate health messages in communities, since the use of multiple methods opens opportunities for people to have interactive communication and reasoning (Jorm, 2000).

Using multiple methods to communicate enhances the quality of the message allowing it to have room to accommodate the targeted audience. Learners that experience difficulties in understanding written information will be accommodated through the verbal messages communicated. Using information that has been tailored specifically to influence the social and psychological behaviours has been shown to be successful in creating the desired behavioural changes (Skinner *et al*, 1999). Tailored information highlights the main points of a message and is able to capture the audience's attention, thus increasing the chance of stimulating behavioural changes amongst people (Schillinger, 2003). Providing material that is summarised allows the reader to remember the information since there is not an 'overload of information'. Educational methods and materials such as pamphlets or take home activities that can be done with other family members, allow parents to gain information at a time that is convenient. Materials that are pre-printed and handed out to the audience are effective if the audience is able to understand and relate to the content provided (Jorm, 2000). This method, however, needs to be accompanied by other methods, such as word of mouth, plays

etc. that accommodate people that are illiterate (Jorm, 2000). Mass treatment campaigns for bilharzia have made use of the arts to spread the knowledge of bilharzia in communities with low literacy levels. Music and dancing are often used to promote learning related to bilharzia. The Ghana health ministry's MTC was able to reduce the stigma around bilharzia by using songs and dances that had strong messages about bilharzia (Garba *et al*, 2006). Learning from communication strategies that address large numbers of people may contribute to the success of the current bilharzia communication strategy, which is the focus of this study.

Locality of Mass Treatment Campaigns

Mass treatment venues or sites have an impact on participation levels. Support from the community assists in improving the participation levels during the mass treatment. Active stakeholders that have the potential to encourage participation in the community may gain more respect from the community, since they are helping community members to improve their lives (Ndiaye *et al*, 2003). A sense of ownership and respect is what community members should have when projects are implemented in their community (Perry, 2002). Projects that are respected and well acknowledged by community members tend to be more likely to gain the support from both the individuals and organisations in the community (Perry, 2002). Mass treatments require assistance from community members, and cannot solely rely on the external forces such as staff and other external organisations.

Community involvement is a key component in participation (Bessette, 2004), although Andrea Cornwall (2008) advises one to be cautious when selecting participants from the community who will take active roles in promoting campaigns (Cornwall, 2008). Being cautious when selecting the key people to be involved in the project has proven to assist in minimising conflicts, spread of incorrect messages to the community (Cornwall, 2008). If the people chosen are supportive of the project and they are able to influence other members of the community, the participation of the community in the project will increase (Bessette, 2004).

Training allows project implementers and planners to assess the volunteer's attitude and commitment towards the project. Participation is encouraged differently in each communication strategy (Ni, 2001). As a result the DoH MTC encouraged participation by providing verbal and printed media to parents and learners. This study analyses the reception of the information provided to the learners. The study acknowledges that the venue of the

MTC may impact on the participation rate of the learners since the environment is open to all learners and learners may share perceptions that may influence participation in the MTC.

School-based project

Mass treatment is often offered in centralised locations such as schools or clinics, particularly when the beneficiaries of the campaign are school going children (Carpenter, 2007). The benefits of a MTC conducted in schools is that there is easier access to children since they are located in the one area, and the school staff may be willing to help with the administration, since provision of treatment medication in South Africa may only be distributed by health professionals (Elder, 2007). The WHO acknowledges that in countries where academic school staff is permitted to distribute medication it has improved the MTC procedure and made the process more efficient (WHO, 2011).

School based mass treatments have been shown to have a reduced number of people participating in the MTC, because community members that are non-schooling or not part of that specific school feel neglected (Elder, 2007). The school based mass treatment may be effective in treating specifically selected schools but it also fails to accommodate parents in the treatment if they are not invited to be part of the treatment (Elder, 2007). Communicating with parents is a challenge for MTCs conducted in schools, since they do not have full access to the parents, but they have an opportunity to work closely and share more information with the learners (Perry, 2002).

In schools the MTC team may have to obtain permission to work with the schools and learners prior to the treatment (Backhouse, 1998). Mass treatment must ensure that each individual gets the correct dosage and ensure good coverage percentage. Going back to school after the treatment day and ensuring that the majority of the learners have received the correct doses of treatment is a method that can help achieve a good coverage (Ni, 2001). Countries such as Egypt were able to plan strategically to target mass treatment for bilharzia in schools, this strategy was successful and over a number of years lead to a great decline in the bilharzia prevalence and morbidity. Written information has proven to be a communication method to inform parents or guardians about the MTC and the diseases being treatment (Backhouse, 1998).

Community-based projects

Community-based MTCs have been offered in centralised locations such as clinics, community halls or the chief's homestead (Cropley, 2004), where almost everyone in the

community has access. Community based MTCs might have increased participation if they attract community members to the location of the treatment (Perry *et al*, 2000). They may, however, increase a community's frustration since some people may not be able to afford transport funds to get to the treatment location (Shaikh & Hatcher, 2005). Although the positive desire to adopt a healthy behaviour of visiting a clinic may be present, external constraints such as lack of financial resources may lessen the likelihood of the positive behaviour being adopted.

More people are likely to be attracted to participate if the MTC location is within the community. MTC based in communities are best when the intervention is aimed at all the community members not just a targeted age group (Perry *et al*, 2000). The presence of parents may possibly increase the spread of information about the disease through word of mouth, and this has proven to be a successful communication tool in areas that are supportive of the mass treatment (Keys, 1995). However, one should also be cautious of word of mouth as messages can be easily altered resulting in the circulation of incorrect information (Cornwall, 2008). Erroneous information may cause misunderstanding and in the long run can create conflict between stakeholders (Elder, 2007). It is essential that public health educators emphasise the importance of the spread of the correct information regarding bilharzia, since this may lead to increased participation in health projects and MTCs.

A project conducted by an NGO in Niger utilises community based bilharzia MTC which incorporates community members by requesting them to be part of advertising and conveying information pertaining to the treatment of the disease (Ndiaye *et al*, 2003). This MTC strategy places emphasis on utilising stakeholders and gate keepers. John Griffiths delineates stakeholders as "people who are affected by a project, or who can influence it, but who are not directly involved" (Griffiths *et al*, 2007:9).

Gate keepers are often well respected individuals that can provide visitors with information regarding their community. Such people play vital roles when introducing new projects into the community (Bessette, 2004). Biomedical interventions that invite health professional from the community and community leaders when introducing the intervention are able to build stronger trust relationships with the community members. Projects that have the support and trust of the community are more likely to have a higher participation percentage (Molyneux *et al*, 2005).

School-Community based projects

Evaluations of projects implemented in schools and communities assist stakeholders to reflect upon the undertaken activities. Past evaluations suggest that school-based interventions are more liable to succeed since they are able to capture a large targeted audience in a collected area (Keys, 1995). School-community based projects conduct the majority of the projects at school premises but invite community members and external stakeholders to be part of the mass treatment at the school premises (Cetron *et al*, 1996). The approach creates a diverse audience and one has to ensure that the information provided is not only suitable for school going children but also suitable for the parents and other community members (Keys, 1995). The diversity of the people involved in school-community based projects requires project planners to plan intensively so that they are well prepared and not overwhelmed by the community on the date of treatment (Elder, 2007). The planning of the structures and processes should be flexible so that practical activities are able to accommodate unforeseen circumstances (Elder, 2007).

Socio-economic factors influencing MTC

Mass treatments are used to control, limit and prevent the spread and reduce infection rates in communities. The age, level of infection and level of information about the disease being treated, and gender impacts public health communication approaches (Cardey, 2006). MTCs should encourage people to be part of the treatment, and health communication campaign strategies should include professionals with various specialisations who are able to identify and address threats that may arise in mass treatment campaigns (Lang & Yeghyan, 2008). Public health professionals should be aware of social and economic factors that may have influences on initiatives implemented in communities. Factors such as women's autonomy and economic stability may influence public health initiatives.

Women's autonomy- who decides about participation in the MTC?

In developing countries in Africa, Asia and South America women were considered to be under the leadership of men, and even today in some countries men are considered to be the head of the household (Vlassoff & Bonilla 1994). In patriarchal households women are often unable to make the sole decision of whether to take treatment or not, as they frequently need to seek permission from the head of the household. The lack of ability to make sole health decisions leads to their views being influenced by their environment and society (Shaikh & Hatcher, 2005) and potentially to the lack of health information and services (Ang, 1990). The MTC is mainly conducted in rural areas where the majority of households are headed by

men if they are present. The study investigated who reads the information leaflet and makes the decisions regarding the learner taking treatment. Understanding such information will assist in designing future materials that are targeted to appropriate groups. The information in materials needs to consider that economic stability may contribute in the increase of neglected diseases.

Economic stability

Africa is highly impacted by tropical diseases that cause a financial strain on affected families (Mayaud & Mabey, 2004). Poverty reduction measures are constantly implemented although many people still live in acute poverty. Families living in poverty face difficulties in making future plans to ensure health insurance, and unexpected health costs cause financial strains in these families. The lack of economic stability makes people vulnerable and limits their access to mass treatment centres (Wallack, 1981). Limited economic access may result in poverty but may also directly influence the utilisation of health resources (Riddiough, 1981). A lack of education and low literacy levels influence the effectiveness and reception of public health education interventions, and as a result to health resources such as clinics may not be fully utilised (Chatters *et al*, 1998).

Mass treatments that require financial contribution from patients are less successful in high poverty stricken areas. Therefore poverty does not only exclude individuals from private health care services but also restricts them from participating in the decision making processes that will impact their health conditions (Brownell *et al*, 1983). The WHO plans to tackle the situation by using praziquantel tablets donated by Merck to offer free MTC in African countries with high intensities of infection first and then continuing to countries with low intensities. The main goal is to have eradicated bilharzia by 2020 with the hope then that bilharzia will not be a public health problem (WHO, 2012).

HIV and AIDS Communication Strategies in Developing Countries

South Africa has one of the highest HIV/AIDS prevalence in the world. In the year 2011 it was estimated that at least 5.6 million South Africans were living HIV positive lives whilst an estimate of 270,000 deaths were due to AIDS (USAID, 2012). The KZN province has the highest HIV/AIDS prevalence (Mosam *et al*, 2009) in the country, at 39% of the population attending ante natal care (DoH, 2011). In South Africa 46% of the population reside in rural communities and rural KZN is negatively impacted by the soaring HIV/AIDS prevalence (DoH, 2011). In Sub-Saharan Africa it is mainly women who are affected and infected with HIV and AIDS (WHO, 2011). Women are considered to be more susceptible to HIV

infection as compared to the males, due to the lining of the cervix and vagina that contains cells that are likely to get infected through sexual intercourse, with a HIV positive male (WHO, 2011). HIV and AIDS continue to have a negative impact on the life expectancy ratio since AIDS results in many people dying. Countries that have high HIV infection rates are expected to have a reduced life expectancy ratio that has decreased by 20%, by the year 2020 (WHO, 2011). HIV and AIDS have resulted in great social and economic loss in Africa. Due to the high mortality caused by AIDS, there are an estimated 2,100,000 orphans thus increasing the number of child headed households and resulting in a decrease in production. Such dynamics contribute to increasing the poverty rate in developing countries (WHO, 2011). The sixth goal of the Millennium Development Goals is to reduce the HIV and AIDS endemic by 2015 although its continuation will result to more than six million households living in poverty by 2015 (WHO, 2011).

The HIV and AIDS pandemic highlight the necessity for public health initiatives to create and improve the awareness of HIV and AIDS (De Lange & Ojo 2011). Institutions such as local churches, schools, clinics and hospital have been used as central areas of distributing information to people (Mahlasela, 2009). The South African DOH has many initiatives to promote HIV and AIDS awareness and safe sex behaviour. One of the first national campaigns introduced was the loveLife campaign which targeted the youth and promoted safe sex amongst partners hoping to achieve a reduced number of teenage pregnancies and decrease HIV and STDs (De Lange & Ojo 2011). The campaign utilised mass media such as television, billboards, youth centres, clinics and booklets to promote the loveLife brand in its objective to create positive attitudes and behaviours concerning sexual health (Thomas, 2004). Despite the campaign's efforts HIV infection rates continued to escalate (Thomas, 2004). It is proposed that the approach used may have failed to create and encourage behavioural changes amongst the targeted audience by not advertising the necessary information. The loveLife campaign utilised billboards and posters as some of their communication tools to communicate with the public. Carel Jansen and Ilse Janssen (2010:131) state that loveLife:

Want people to think about our posters. Either they understand it from first hand or they get angry and say: I do not know what they are trying to say. At some point in our campaign, we will get people to wonder. This creates conversations between parents and children, dialogue between peers. That is exactly what we want to achieve, that people talk about HIV/Aids and sex.

The loveLife campaign was criticised for not using sufficient relevant educational programmes and messages to supplement messages communicated through mass media (Jansen & Janssen, 2010). After being criticised loveLife changed and focused most of its messages into partner reduction since their research showed that many teenagers and young adults have more than three sexual partners at once (Pettifor *et al*, 2005). Therefore, public health programs that promote partner reduction and condom use need to continue since multiple partner behaviour and not using condoms has resulted in increased HIV infections (Pettifor *et al*, 2005).

John Hopkins Health Education in South Africa (JHHESA) that is funded by PEPFAR and USAID provides public health education that is targeted of South Africa (Delate, 2007). JHHESA has contributed to the health and communication sector successfully by designing the majority of their public health communication works around the social ecological model (Johnson, 2009). It has collaborated with other institutions such as Soul City to develop communication strategies according to the SEMCHB (Kincaid et al 2007) in order to promote public health communication interventions (Mahlasela, 2009).

JHHESA uses the SEMCHB to understand the context (multiple levels from individual to policy) of a public health issue, and this allows them to design strategies that suit the particular environment and its intersectional relationships (Delate, 2007). They design HIV/AIDS programs that emphasise allowing participants to reflect and understand risky sexual behaviours and the consequences (Mahlasela, 2009). One of the main differences between the loveLife and JHHESA is that loveLife focused on *telling* the audience to reduce their number of sexual partners but JHHESA focuses on making people *understand* the effects of risky sexual behaviours [my emphasis].

The loveLife campaign was highly criticised for using messages that did not relate to their targeted market and “no support was found for loveLife assumptions that the more the billboards make people wonder about the messages, the greater the chance will be of discussion and debate amongst young South Africans” (Jansen & Janssen, 2010:139). Whilst for example *Intersexions*, a locally produced educational television program was able to start discussions that encourage people to talk about HIV and AIDS which are topics that people do not often speak about. The local drama uses entertainment education (EE) to disseminate pro-social messages about HIV/AIDS prevention and treatment while showing the possible result of risky sexual behaviours.

The final episode of the series made viewers more conscious of how the virus spreads via multiple and concurrent partnerships (MCPs), whilst providing the viewers with ways of how they can take control of their current situations with responsible behaviours such as HIV testing or condomising. The use of a narrator's persuasive voice as the voice of HIV allowed the message to be more serious and firm thus shocking viewers and focusing their attention on the message and stimulating the urge to self-efficacy. The provision of the various healthy and responsible behaviours that can be adopted allow viewers to see that how they can adopt these new behaviours instead of living in a state of fear (De Lange & Ojo 2011).

Female Genital Bilharzia (FGS) is caused by *S.haematobium* and affects the female genitals such as the ovaries, uterus and vulva. A study in Zimbabwe (2008) revealed gynaecological symptoms such as vaginal bleeding and infertility which may be experienced by infected patients (Kjetland, 2008). Lower abdominal pains and abnormal bleeding, which may affect the ovaries and the fallopian tubes can be associated with FGS. Lesions around the vulva and cervical areas caused by the bilharzia eggs may act as entry points for other infectious diseases such as sexually transmitted infections, HPV and HIV (Swai, 2006). These lesions were untreatable using praziquantel in older women. The assumption made in Zimbabwe was that women who have chronic lesions and are HIV positive may have a greater risk in transmitting and getting infected with HIV during unprotected sex (Kjetland, 2008). The study on older women conducted in Zimbabwe lead to an interest as to whether gynaecological lesions caused by FGS can be treated in young women. The need to treat bilharzia at early an age was also observed; hence the knowledge gained from that study has contributed to the implementation of the DoH MTC in the Ugu District. This study thus explores how learners relate bilharzia to HIV/AIDS.

Conclusion

The provision of information is one of the methods a project can use to strengthen itself (Wallack, 1981). Mass media communication should clearly state the objective of the mass communication and the messages sent out should be clearly understandable to the public (Wallack, 1981). The benefits of treatment and reasons to participate in mass treatment programmes should motivate the community at large. Public health communication is a recognised method of promoting health and cultural topics that surround MTCs since communities are grounded in different values and belief systems. Considerations of the various factors that change an individual's attitude and behaviour with regards to MTC try and address these in order to improve participation and commitment levels in communities.

The MTC should have a targeted audience but should also include other stakeholders such as community members and parents. This consideration is foregrounded in the social ecological perspective and SEMCHB (Kincaid et al, 2007) that theoretically frames the study and will be discussed in detail in the following chapter.

Chapter Three: Theoretical Framework

Introduction

This study makes use of the Social Ecology Model of Communication and Health Behaviour (SEMCHB) (Kincaid *et al*, 2007) as a framework that will include various behaviour change theories to underpin this study's analysis of the decisions and perceptions learners have regarding mass treatment campaigns (Campbell & Mzaidume, 2001). The SEMCHB analyses situations from many layers thus providing assistance in understanding the type of communication strategy being used in the Ugu District Department of Health.

Public health initiatives make use of peer communication to encourage peer education in communities. Societal conditions influence the decisions made by teenagers, for example, many teenagers are driven to alcohol abuse because of the poverty challenges they face on a day to day basis (Block *et al*, 2008). Societal problems such as crime affect the individual, interpersonal and the community levels. This chapter explores the role parents and role models contribute to encouraging healthy behaviour change in terms of bilharzia prevention. This study explores behaviours during the DoH MTC and how these behaviours may influence the learner's participation.

Sustainable Communication for Behaviour Change

Public health programs and educators aim to achieve behaviour change. Without the change in behaviour, it is difficult for the desired actions to be adopted by the community or the individual (Ory *et al*, 2002). In order to fully understand what motivates people to change their behaviour social change communication (SCC) and behaviour change communication (BCC) need to be integrated in the development of public health initiatives (Slonim *et al*, 2005). Behaviour change communication is an on-going process, whereby one continuously works with an individual, communities and various institutional groups to create communication strategies that are designed to make people adopt positive behaviours to improve their situations (Solomon & Kington, 2002). Communication strategies need to create supportive environments which are able to stimulate people to try and maintain their newly adopted positive behaviours (Solomon & Kington, 2002).

Behaviour Change Communication (BBC)

BCC approaches may aim to influence attitudes (Knill & Lenschow, 2005). The reception of the information is influenced by social, educational and economic factors of the information receiver (Knill & Lenschow, 2005). Individuals do not receive information in the same

manner, usually due to the diversity of their backgrounds. Their traditional, religious and cultural beliefs combined with their life experiences influence individual attitude. A change in certain belief and value systems contributes to a change in behaviour, and a small change in attitude may in the long run result in a change in behaviour. Therefore, exposing people to information that will question their beliefs is a way that one may attempt to promote behaviour change (Aspegren & Lanberg-Madsen, 2005). Continuous exposure to the desired behaviour and attitude may lead to people being in favour of the desired change. The messages sent out need to be effective and persuasive so that the desire for people to change their actions can lead to them changing their behaviours. The DoH MTC sends out written information to schools as a measure to increase the information learners have regarding bilharzia and the MTC.

Messages sent out to the public need to accommodate the social environment. The social environment has the potential to hinder the message being sent out to the public. Therefore various techniques, strategies and skills may be required to encourage people (Brownell *et al*, 1983). Models have been designed to assist people to understand why, on occasion, public health initiatives have been unsuccessful. Frameworks create guidelines that protect public health professional not to overstep social and emotional boundaries with their clients. The understanding of the social and emotional boundaries allows public health professional to be able to articulate messages that are appropriate to the audience (Brownell *et al*, 1983). BBC is informed by a number of theories that explain the outcomes of people's behaviours and explores the reasons as to why people adopt certain behaviours and attitudes.

Behaviour change theories are part of human development and should influence an individual to create the change they want in their lives (Solomon & Kington, 2002). The actions and behaviours of those that surround the individual, impact on the individual's life (Stokols, 1996). For example, children who grow up in households where alcohol is highly abused tend to be sensitive around alcohol issues (Christoffersen & Sooththil, 2003). They themselves might end up consuming high levels of alcohol or alternatively, dislike alcohol since they experienced life with people that consumed high amounts of alcohol daily. They grow up making decisions based on their experiences, instead of what they actually wish to do (Christoffersen & Sooththil, 2003).

Behaviour change becomes essential when risky behaviours, such as alcohol abuse, excessive smoking or having unprotected intercourse with multiple partners, are practised (Williams *et*

al, 2005). The BBC theories focus on the actions and activities that one practises, bearing in mind that one's actions or activities impact the people around one. Hence the programs that are aimed to address people's behaviours try and create options as to how the desired behaviour changes can be adopted, and how the individual will continue to maintain the adopted behaviour (Williams *et al*, 2005). Understanding why people practise these behaviours has assisted into planning effective communication strategies that promote actions that will lead to the desired behaviour (Willey *et al*, 1996).

BCC is used extensively in HIV and AIDS and Tuberculosis (TB) public health campaigns. Self-regularity should be included when designing public health campaigns (Zimmerman, 1990). Self-regularity is the active management of resources and has the ability to alter motivational beliefs such as self-efficacy and goal orientation. It can encourage and accommodate various learning styles that have the potential to develop an individual's character (Schunk, 1991). Campaigns that include self-regularity in their messages encourage people to be more responsible for themselves (Gregson *et al*, 2006). For example, people need to take the initiative to put on a condom during sex since one cannot do it for them. BBC is well used in encouraging physical behaviour change activities that range from wearing a condom during sexual intercourse to exercising when overweight (Gregson *et al*, 2006). For example, people need to take the initiating to put on a condom when having sexual intercourse. BBC is a well-developed method that needs to be sustained in order to create a positive change in communities. Therefore in order to have an impact on the community, the community needs to sustain their adopted positive behaviours. Further, the behaviour of an individual may affect the social norms of the community, thus creating a need for social change communication and societies to be mobilised (Nutbeam, 2000).

Social Change Communication

Social change communication (SCC) allows people to participate in communication strategies that may create sustainable changes in their lives (Parker & Aggleton, 2003). It provides communities the opportunity to experience social change within developing communities. Human behaviour may be complex but it can be influenced by the society around you (Ang, 1990). SCC allows one to facilitate the process whereby the messages created during the interactions with other community members become sustainable and produce ideas that can encourage sustainable behavioural changes (Bellg *et al*, 2004). Social Change Communication is helpful in understanding the reasons for the success and failures of community initiatives.

SCC can be achieved by integrating community dialogues within the communication strategies, dialogues that will encourage various members of the community to be able to express their opinions (Naar-King *et al*, 2006). Dialogues that include males and females of various age groups in some cases may limit the information one can get, since some females or males may not free entirely comfortable to communicate personal matters to the opposite sex (Ndiaye *et al*, 2003). The implementation of community dialogue and collective action introduces SCC into communities whereby they are able to interact and discuss challenges and how they can be overcome (Olornnisola, 2002). Through such communication they are able to influence behaviour change. Allowing people to talk about their emotions, views and how they react to health issues in the community may generate ideas as to how communication strategies for public health initiatives can be implemented across communities (Block *et al*, 2008). Gaining perspectives from the community provides project planners with information about public wishes during the planning phases of the project. Hence project planners are able to design communication strategies that include comments from the public (Coday *et al*, 2005).

Communication strategies which accommodate social change communication enable community members to identify their priorities and the means to achieving the solution. Action plans with goals and visions have the potential to stimulate social mobilisation within the community. The approach provides experiential learning for those involved in the process, since outcomes such as increased knowledge or adaptation of health behaviours may be achieved. On a broader context social outcomes such as improved community leadership and discipline may be achieved through the community dialogues.

Communities are diverse and everyone has his/her own beliefs, perceptions and value systems. Bellah *et al* (1985: 333) define community as:

a group of people who are socially independent, who participate together in discussions and decision making, and who share certain practices that both define the community and are matured by it. Such a community is not quickly formed. It almost always has a history and so is also a community of memory, defined in part by its past and its memory of the past.

It is the diversity of individual characteristics that make the community complex and ever-changing. Therefore, models that accommodate diversity are required to address and assist in combating the challenges faced by community members (Ang, 1990). Models such as the

SEMCHB (Kincaid et al, 2007) are able to systematically view the interconnections that influence the behaviours and actions faced by the individuals, communities or institutional groups. It is important to understand the external forces that surround the situation in order to create communications strategies that will be able to disseminate effective messages that will influence healthy behaviour. The DoH MTC is a sensitive project in some rural communities in the Ugu District. Not all communities are supportive of the presence of the project in their communities; their negative attitude has the potential to spread into neighbouring communities. The project employees are cautious when approaching these communities, which are also offered additional information to try and increase the community's knowledge about the DoH MTC and achieve a positive attitude towards the MTC. Accepting information about new biomedical intervention that is being implemented in the community that require children to participate can be a challenge for some parents. Therefore, the project needs to ensure that parents have a good understanding of the intervention to prevent future conflicts.

Sustainable Biomedical Communications

Biomedical projects are expected to influence people's lives in communities. Expectations exist such as improved health awareness, human development or improved quality of life within the community. Biomedical projects in communities and such expectations are achievable if they are within the scope of the project (Willey *et al*, 1996). Communication becomes a key element since it directly affects the response a project will receive from the community, thus communication interventions within biomedical projects are required (Stokols, 1996). The DoH MTC provides a good example of a biomedical intervention in the Ugu District community. The free bilharzia treatment offered to learners and occasionally to teachers or family members is a method to improve the individual's quality of life. Communicating to community members and relevant stakeholders about the project assists in identifying opportunities (Solomon & Kington, 2002) not only to improve the project, but the health status of people affected by bilharzia in the Ugu District.

Biomedical interventions that have included communication strategies to promote awareness encourage participation and encourage people to share their emotions and thoughts (Shaikh, 2005) HIV and AIDS was once a taboo topic in South Africa, although slowly South Africans are beginning to open up and express their feelings and fears towards HIV and AIDS. This has led to more people encouraging and supporting each other to partake in activities such as Voluntary Testing and Counselling (VCT), use of protection during sexual intercourse, male circumcision and taking Antiretroviral (ARV) treatment (Scalway, 2010).

The South African National Communication Survey (2009) indicated that communication strategies play a critical role in biomedical projects. Exposure to communication strategies related to HIV contributed to the decrease of risky behaviours such as concurrent partner relationships and an increase in positive behaviours such as use of condoms. Successful campaigns such as the “Scrutinize” campaign managed to make 56% of the people exposed to the campaign within a frame of 12 months adopt the behaviour of using a condom (Scalway, 2010). The Scrutinize campaign communicated with the public by showing how rapidly HIV can spread and it also depicted situations that can make one vulnerable and at a higher risk of getting HIV. These messages not only made people cautious but they also motivated people to change their risky behaviours (Scalway, 2010).

Information given to the audience constantly needs to be upgraded, providing opportunities for health communication programs to be implemented; hence communication strategies should be included in biomedical projects (Ory *et al*, 2002). The bilharzia project constantly re-enforces messages to their audience encouraging participation in the MTC at all times. Messages are emphasised through assembly meetings at schools, talking to learners during their break times at school and by facilitating five minute discussions in classrooms during school hours. These messages explain and give reason as to why the individuals should participate in the DoH MTC.

Theories and models addressing change communication

This section explores the theories that assist communication strategies to be able to provide effective messages for their targeted audience. The following theories that will be discussed are located at the individual level of the SEMCHB (Kincaid *et al* 2007) that provides the conceptual framework for these studies. Each of these theories are thus useful in accounting for or predicting how behaviour is influenced by communication. The theories and models assist in providing guidelines to ensure that communication strategies are able to influence social change and behavioural change communication. Fear appeals (Witte, 1992), The Extended Parallel and Process Model (Witte, 1992; 1997), Social Cognitive Theory (Bandura, 1971; 2004) and the Health Belief Models (Stokols, 1996) are further discussed below with relation to self-efficacy. These theories and models assist in predicting the reasons for the behaviour practices in relation to the DoH MTC and bilharzia. They will also provide a guide in the analysis of the reception of the DoH MTC communication strategy.

Exploring the Fear appeals

Fear appeals are persuasive messages that are designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends (Witte, 1992). They use negative consequences of the action to promote awareness or a desirable behaviour change (Pfau, 2007). The fear approach relies on the threat in the message to motivate the individual to shift to the desired behaviour practice. Kim Witte (1992: 8) defines fear appeals as “[p]ersuasive messages that arouse fear by depicting a personally relevant and significant threat, followed by a description of feasible recommendations for deterring the threat”

This approach is founded on developing messages that highlight unpleasant consequences and create obnoxious emotions with the objective to make people want to change their behaviour (Witte, 1997). Fear appeals are able to work best when messages sent out to the audience include self-efficacy. When messages that include a high level of self-efficacy are invoked in the mind, actions may be more powerful than reason (Witte, 1997). Self-efficacy is defined as an individual’s perceived ability to perform a particular behaviour (Bandura, 1977). Kim Witte (1992:4) elaborates:

Efficacy also exists as an environmental or message cue and may lead to perceived efficacy, which refer to cognitions about efficacy. Message depictions of efficacy focus on the effectiveness of the recommended response (ie response efficacy) and on the targeted audience’s ability to perform the recommended response (i.e. self-efficacy). Correspondingly, perceived response efficacy refers to an individual’s beliefs as to whether a response effectively prevents the threat and perceived self-efficacy to an individual’s belief in his or her ability to perform the recommended response.

Campaigns that elicit fear or introduce punishment are often futile and do not achieve the desired behaviour change (Maloney *et al*, 2005). The rationale behind the purely fear-based approach is that harsh words or actions are utilised to stimulate behavioural changes by inducing fear in the target audience. The use of fear appeals conceal the message and highlight the negative result of the bad behaviour. Although theorists such as Janis (1935) believed that using fear in a campaign lead to people changing their behaviours, campaigns that implement strategies using fear appeals should be aware that re-enforcement of the message using positive messages about self-efficacy is essential to reduce the paralysis of

fear invoked in an individual (Witte, 1992). In reality not many fear campaigns are successful due to the threat not being appropriate and relevant to the subject of the particular public health campaign (Witte, 1997).

In New South Wales the road safety campaign failed to invoke fear in its behaviour change strategy. The campaign had meant to invoke fear by asking road drivers if they felt naked when driving without wearing a seat belt, whilst other campaigns used horrific graphics of deaths that had resulted in drivers not wearing seat belts (Lewis *et al*, 2007). The question asked by the New South Wales road safety department failed to stimulate fear since the campaign failed to make the public aware of the potential harm that can be caused by driving without wearing a seat belt. Road safety campaigns that highlighted the fear of being arrested as opposed to dying due to drunken driving are more successful, since the public find being arrested more realistic as opposed to dying in a horrific car accident (Lewis *et al*, 2007). The fear being invoked needs to relate to the targeted audience and it depends on the objective of the campaign that is being introduced into the community (Lewis *et al*, 2007).

The manner in which the audience receives the information will depend on their experiences, environment and value systems (Witte & Allen, 2000). Therefore, a more favoured approach introduced visuals to encourage cues to actions that may enhance self-efficacy (Cardey, 2006). Visuals, such as people infected with bilharzia and showing symptoms such as chronic lesions may possibly be used if the MTC chose to promote public health through the fear approach. The inclusions of messages that stimulate self-efficacy may lead to people being cautious of the possibility that if bilharzia is untreated it may cause lesions. Messages that facilitate self-efficacy may lead to positive behaviour change, since the motivation to change in the message has made the viewer to think positively about their situation. The main variables used to evaluate the success of fear appeals are perceived efficacy, individual personal characteristics, the effectiveness of the fear elicited in changing behaviour, and the perceived threat associated with the message (Witte, 1997). These variables can, when combined, assist in evaluating fear approaches used to encourage positive behaviour change.

Fear, perceived efficacy and threat are the main concepts that build a strong fear appeal. The balance in the high levels of fear and efficacy promote people to be more aware and conscious of their activities and habits. The high efficacy levels allow people to believe that the threat in the message can be decreased through good behaviour change.

Campaigns targeted to promote healthy lifestyles may be specifically designed to include fear in individuals (Glynn *et al*, 1996). The objective of a fear appeal is meant to encourage a change in attitude that will hopefully lead to a positive behaviour change. Fear may act as the driving force that motivates behaviour change. The arousal of fear coupled with efficacy assists people to make decision that will protect them from harm (Witte, 1992). Once self-efficacy is achieved, through the stimulation of fear, behaviours that protect the individual and people that surround the individual are adopted. Fear may be stimulated in an individual by the information provided by public health campaigns. The people and organisations that surround the individual have the ability to enhance or reduce fear levels experienced by the individual (Maloney *et al*, 2005). This is highly dependent on the respect the individual has for the person who influences their fear levels. Children aged six to ten have great value for their teachers and parents hence they tend to listen and act on the advice they receive from their parents or class teachers as opposed to the advice they receive from strangers (Ebbeling *et al*, 2002). An obesity focused study in the United States which included primary school teachers in the implementation would encourage primary school learners to practise healthy eating behaviours. Teachers encouraged learners to eat vegetables and fruits so that they can remain healthy. Learners were able to understand the information provided by teachers since they are people that they can relate to. The fear of learners dying young contributed to a slight change in the eating habits of learners (Ebbeling *et al*, 2002). Exposing learners to possible outcomes of unhealthy eating habits through visuals and testimonies generated their self-efficacy, for them to be more conscious of the types of food they consume (Ebbeling *et al*, 2002).

Fear may have a direct relationship with persuasion which is important in behaviour change communication. Ronald Atkins and Charles Rice (2001: 1) define persuasion as:

[t]he operational formula for preventing risky behaviours is susceptibility multiplied by severity, using a loss frame to motivate the audience with a high likelihood of suffering painful consequences. The incentive appeals often build on existing values of the targeted audience, so the messages tend to reinforce the predispositions or change beliefs about the likelihood of experiencing valued consequences.

The threat of the message creates perceptions that can subconsciously lead to an individual being persuaded. Persuasion can occur subconsciously thus messages may not require continuous encouragement and re-enforcement for people to change their behaviour

(Maloney *et al*, 2005). This study uses the concepts of perceived threat and perceived efficacy to explore if/how learners feel that the bilharzia prevention messaging either invokes fear, how it persuades them to participate in the DoH MTC and possibly adopt or continue pro-social behaviour.

Extended Parallel Process Model: Understanding the reason for fear

The Extended Parallel Process Model (EPPM) uses the parallel process model which is derived from Howard Leventhal's (1970) work. Leventhal explored the framework that contributed to fear and danger control which are also incorporated in the EPPM (Leventhal, 1970). Leventhal's work unwrapped opportunities to investigate how people can avoid or deal with situations that pose danger or threats to their lives and how these dangers or threats influence their attitude and behaviours (Leventhal, 1970).

The EPPM forms part of the perceived threat theory since the theory focuses on creating a balance between threats and self-efficacy beliefs. The model enhances one's understanding of how ineffective fear messages can cause damage resulting to undesired behaviour change (Witte, 1997).

The EPPM has been widely used in public health to promote health awareness and encourage behaviour change for diseases such as HIV and AIDS or tuberculosis. The beliefs of an individual may be influenced by society and the people close to them (Shilts *et al*, 2004). Individuals that grow up in families affected by hereditary diseases tend to be more cautious of disease since their family has been exposed to and experienced the disease first hand. They become more cautious in doing activities that can put them at risk (Nutbeam, 200?). For example, young males suffering from haemophilia practice safer sex, because of the fear of getting cuts or sexually transmitted diseases that may results in continuous bleeding (Norman *et al*, 1998). It is reported that haemophilic positive men were more cautious in practicing safe sex because of the harm that haemophilia can cause, than in getting infected with HIV (Norman *et al*, 1998). It was not the threat of getting infected with HIV that stimulated behaviour change but the threat of bleeding to death that caused haemophilic men to change their actions (Norman *et al*, 1998).

The EPPM suggests that fear responses are inversely associated with danger responses and supports fear appeals that produce both danger and fear control responses (Allen & Witte, 2006). Weak messages do not promote fear within the individual and thus fail to create behavioural change, rather they decrease the value of defence responses. Public health

messages containing fear appeals may be strengthened if implemented at a societal level as opposed to at an individual or community level. Information receivers may see the potential fear invoked or threat if celebrities or people of high status are used in the campaign.

The EPPM is situated at the individual level of the SEMCHB (Kincaid *et al*, 2007). This level takes into consideration that the perceived threats and danger may be influenced by self-efficacy, subjective norms and the belief and values of the individual (Kincaid *et al*, 2007). Hence the model provides a guideline in understanding, whether learners are able to balance threats received which are related to bilharzia and their self-efficacy beliefs. The EPPM will assist to understand if learners are able to relate to the potential dangers that may occur if bilharzia is not treated.

Social Cognitive Theory

The social cognitive theory (SCT) developed by Albert Bandura is used to understand and explore how individuals obtain and maintain desired behavioural patterns and takes the environment as a contributing factor in maintaining the desired behavioural patterns (Bandura, 1997). The individual's past experiences may potentially shape the individual's decisions in participating in the treatment (Bandura, 1971). This theory does not only focus on initiating the desired health behaviour change but it furthermore considers how the adopted health behaviours are maintained (Bandura, 1971). Learners attending the DoH MTC are surrounded by their social networks. The attitude of their friends and families contributes to the decisions a learner will take towards receiving treatment.

The social cognitive theory further explores how activities such as modelling and imitation contribute to health behaviour patterns. The use of celebrities to transfer positive health behaviour model allows people to learn within their social environments, through modelling, imitating and observing the actions, behaviours or the emotional reactions of their icons (Bandura, 1971). The SA DoH utilised King Zwelithini, a Zulu King who would be recognised at a societal level within the SEMCHB to encourage Medical Male Circumcision (MMC) in KZN, and this approach showed to be of benefit, since many men were circumcised. The threat of the message should enhance the message, rather than the threat being the message. The stronger the perceived self-efficacy the more eager people are to process the message and make actions to limit the danger (Allen & Witte, 2006). The MMC chose to make the public realise the importance of behavioural change patterns by highlighting the potential benefits of the procedure, and such campaigns are likelier to

succeed (Passyn & Sujun, 2006). When the perceived threat exceeds the perceived self-efficacy, then people begin to control their fear instead of the danger which may potentially result in the message being rejected.

Messages that only contain fear should be revised since they do not encourage or promote a way to motivate behaviour (Bandura, 2004). A motivation or solution to the problem should be provided when implementing fear appeals. The DoH MTC was aware that not all individuals would respond positively to the campaign, and that the information materials would challenge the thoughts of those opposing the campaign and should be available to the public to try and influence their thoughts and opinions. The DoH MTC informed learners about the MTC, and the study was aware that some of the messages sent out to the learners may invoke fear or may make learners more conscious about the disease. There continues to be a need for learners to receive as much information as possible, and learners need to share the information with parents so that they could be aware of the MTC.

Participatory approaches may motivate change from within the individual, which can be potentially used to decrease the vulnerability of a person if the threat factor is focused without considering self-efficacy (Cardey, 2006). Fear approaches that do not achieve the desired behavioural change indicate the need for participatory approaches that explain health behaviour patterns at individual, community and societal levels, since one hopes to understand the best point of intervention. Understanding opinions from various angles becomes more effective in discovering the means of intervening (Roberson & Roger, 1988).

The need for the MTC to be selective about the communication approaches remains essential in order to promote effective messages that the public will relate to and understand. Such messages need to be evaluated so that perceptions of the learners are considered and if need be are addressed in the implementation of the MTC. This study provides a platform for learners to express themselves as to how they received the information. The MTC DoH seeks to explore reasons as to how high school going children receive the information and whether this information contributes to their knowledge about the MTC, bilharzia and encourages participation in the MTC.

The Health Belief Model: Reasons behind health practises

The Health Belief Model (HBM) explains and predicts the factors that influence an individual's health decision (Hochbaum *et al*, 1952). The model may be applied to encourage participation and improve the participant's capability to take the necessary actions. This

theory relates to the socio-physiologic theory of decision making and how it is influenced by their surroundings. Daniel Stokols (1996) further explains that the HBM provides the “motivational underpinnings of peoples health beliefs and behaviour” (Stokols, 1996:284). The motivational factors may be highly influenced by the perceived severity, susceptibility, cost and benefit and such dimensions are able to influence the individuals thoughts about taking treatment or not (Hochbaum *et al*, 1952).

Individual perceptions, modifying behaviours and the likelihood of action may determine the health behaviour that will be adopted by an individual (Rosenstock *et al*, 1994). An individual perception relates to how an individual perceives the seriousness of the disease taking into consideration how the susceptibility and severity of the health risk will impact their lives (Hochbaum *et al*, 1952). When the perceived susceptibility and severity is high an individual may consider adopting the desired behavioural changes (Rosenstock *et al*, 1994). Modifying factors include demographic variables, perceived threat, and cues to action. The environment is a contributing factor when it comes to making health decisions (Hochbaum *et al*, 1952). The lack of health facilities such as health clinics are one of the contributing factors to encouraging positive behaviour change (Hochbaum *et al*, 1952). When the perceived threat is high an individual may consider the actions that should be adopted in order to practice positive behaviour change (Rosenstock *et al*, 1994). The DoH MTC has communicated information, prevention and treatment measures relating to bilharzia and the MTC. The behaviour intentions and belief value are part of the individual level of the SEMCHB, such factors influence the learners perceived severity, susceptibility, and benefit. This study seeks to explore whether the information has contributed in influencing the learner’s health decision making processes via the conceptual lens of the HBM as part of the SEMCHB (Kincaid *et al*, 2007).

Understanding opinions from various angles becomes more effective in discovering the means of intervening (Roberson & Roger, 1988). The need for the MTC to be selective about the communication approaches remains essential in order to promote effective messages that the public will relate to and understand. Such messages need to be evaluated so that perceptions of the learners are considered and if need be are addressed in the implementation of the MTC. This study provides a platform for learners to express themselves as to how they received the information. The MTC DoH seeks to explore reasons as to how high school going children receive the information and whether this information contributes to their knowledge about the MTC, bilharzia and encourages participation in the MTC.

Background to the Social Ecological Model

The SEM originates from the ecological sciences which consider relations between the environment and the animals that utilise nature's resources (Gregson *et al*, 2001). In the 1950s social science researchers applied theories from the natural and biological sciences which assisted researchers to view individuals and the various interactions they have in their societies. The Ecological Systems Theory (EST) developed by Urie Bromfenbrenner's remains the foundation of the SEM which has been commonly used since the 16th century until the present (Bromfenbrenner, 1994). It acknowledges that an individual is not merely influenced by the environment but also by other factors such as the socio economic status of the area (Bromfenbrenner, 1994). The EST is able to identify connections between individual and environmental factors in order to comprehensively study the behaviour. Thus Bromfenbrenner focused his research on human development and behaviour which formed part of the foundation of the SEM (Bromfenbrenner, 1994).

The SEM allows the study to understand how bilharzia affects people of different locations and age. It provides a perspective of how the individual's interpersonal, community and societal levels contribute to the decisions made by the individual. Communication and health behaviour strategies could be improved through the application of the SEM in the planning processes of the strategy. Communication contributes significantly in developing health and behaviour communication strategies that have the potential to successfully alter people's behaviours and actions. The SEMCHB (Kincaid *et al*, 2007) is more relevant to the study, since it primarily provides a framework within the context of communication, health and behaviour which are the core principles of the study. Acknowledgment of the differing influences or levels on health behaviour, as illustrated in the SEMCHB, enable communication practitioners to design communication strategies that are relevant and appropriate to the targeted audience.

Levels of the Social Ecological Model

The model is divided to four categories which are the individual, interpersonal, community and public policy (Stokols, 1996). These four levels are synonymous with the 4 levels of the SEMCHB (Kincaid *et al*, 2007) that uses slightly different terminology. The SEMCHB defines these 4 levels as: individual, 2) social networks, 3) community and 4) societal, as will be discussed further below. Generally the SEM model indicates that these elements can have long term effects on each other. Therefore, the choices made at the interpersonal level can

influence choices made by the society. The model operates on a hierarchical level which analyses the various systems (Stokols, 1996).

The individual level is the foundation level which is a micro system. It primarily looks at the internal characteristics of the individual such as the knowledge, attitude and skills that make the person whom they are (Bursik, 1988). Behaviour change decisions are mainly influenced by internal factors such as personal preferences, perceptions and motivations (Naar-King *et al*, 2006). Models and theories situated at this level, such as the HBM, EPPM and the social cognitive theory, locate these factors as influential in behaviour change. The person may, however, be influenced by external factors such as their community and family members (Naar-King *et al*, 2006).

The second level of the SEM is the interpersonal level. It considers the external relationships such as culture that may influence the individual. Primary interactions such as family and friends form part of the interpersonal level and are considered to have a significant level of influence in the person's decision making processes (Bursik, 1988). The individual's social identity may be represented by the primary interactions as a result of social dynamics, such as family dynamics need to be considered when planning public health communication strategies (Stokols, 1996). Key decision makers influence the success of a public health strategy. Children's decisions are often influenced by their parent's opinions, since parents assume responsibility for their children (Shapiro *et al*, 1998). Mass treatment campaigns that involve children need to accommodate the fact that parents will have an influence on the decisions made by the children. Hence the schistosomiasis MTC consults parents on the decisions of taking treatment.

The third level is the community also known as the institutional level which is the second outermost level. The community level has a tremendous influence on the individual since it usually constitutes a large group of people within an 'institution' (Gregson *et al*, 2001). Churches, businesses, schools or various work places often form part of the community level and influence the social norms and value of the community and individuals (Stokols, 1996). Within a community, community members assign themselves to organisations that interest them and this leads to different groups in the community. The organisation the individual chooses to associate with may result in the individual adopting the behaviours of that particular group.

Public policy, as the outer most level of the SEM may also be known as the macro level. It includes the decisions made by the local or state officials (Shapiro *et al*, 1998). The decisions of local government may impact on the environmental conditions of the community. Decisions are highly influenced by the active policies and can create barriers on interventions implemented in the community (Bursil, 1988). The public policy level has the power to influence all inner level of the SEM although advocacy communication has the ability to influence public policies (Stokols 1996). The Department of Education (2010) defines advocacy communication as “ Advocacy is putting the problem on the agenda, Providing a solution to that problem and building support for acting on both the problem and the solution” (DoH, 2010: 35).

Activities of the MTC need to be in line with the policy regulations. Policies that have the potential to harm or improve the MTC need to be included and accounted for during the planning and implementation phases of the MTC. Treatment offered for bilharzia should be legal in order for it to be used in the MTC (WHO, 2011). The MTC involves participants at all levels of the social ecological model. The MTC does not only impact on the person taking the treatment but it may influence multiple people (WHO, 2011). Therefore the use of the SEM in the study will indicate the linkages of how people and organisations are influenced at multiple levels. The study will primarily make reference to the individual and interpersonal layers of the SEMCHB but will also be aware that the SEMCHB consists of four layers.

The focus will be mainly on the individual and interpersonal layers, since the MTC provides treatment to learners. The treatment offered to the learners requires consent from the learners and their parent or guardians, but the decision for a learner to take the treatment may be influenced by community members, family members, peers or friends hence the study will only consider the individual and interpersonal layers of the SEM. The MTC focuses primarily on providing learners with free bilharzia treatment and providing both learners and community members with information pertaining to the topic of bilharzia. The study will focus on how the school going children receive the bilharzia information provided to them. The study will not consider the societal matters of mass treatment.

The Social Ecological Model for Communication and Health Behaviour (SEMCHB)

The Social Ecological Model for Communication and Health Behaviour (SEMCHB) is developed and based on the concepts of the SEM (Kincaid et al, 2007). It is essential to view the SEMCHB as it directly focuses on the enhancing and guiding of communication

strategies that aim for improved health conditions (Kincaid *et al*, 2007). The SEMCHB integrates the analysis of the individual, social network, community and societal levels and outlines the linkages, and interacts between people and their physical environment and the infrastructure that surrounds them (Storey *et al*, 2012). The framework also indicates how these elements affect communication and health behaviour (Shipro *et al*, 1998). It may be used to understand the various interactions that may occur within organisations or communities. The framework emphasises that society is compiled of interconnected elements that influence each other (Naar-King *et al*, 2006). The Social Ecology Model for Communication and Health Behaviour (SEMCHB) (Kincaid *et al*, 2007) provides the theoretical framework for the study.

The SEMCHB is valuable when understanding perceptions which are in context with communication strategies (Storey & Figueroa, 2012). The model below (figure 1) is derived from the wider social ecological perspective which is able to consider the social and ecological environment of the community (Sallis *et al*, 2008). Douglas Storey and Elena Figueroa further explain that the SEMCHB:

Describes the complexity, interrelatedness, and wholeness of the components of a complex adaptive system, rather than just particular components in isolation from the system. The two key features of this model are the assumptions of embeddedness, a state in which one system is nested in a hierarchy of other systems in at different levels of analysis, and emergence, in which the system at each level is greater than the sum of its parts. The SEMCHB is a meta theory in the sense that each level shown in the model encompasses theories for change for that particular level'' (Storey & Figueroa, 2012:76)

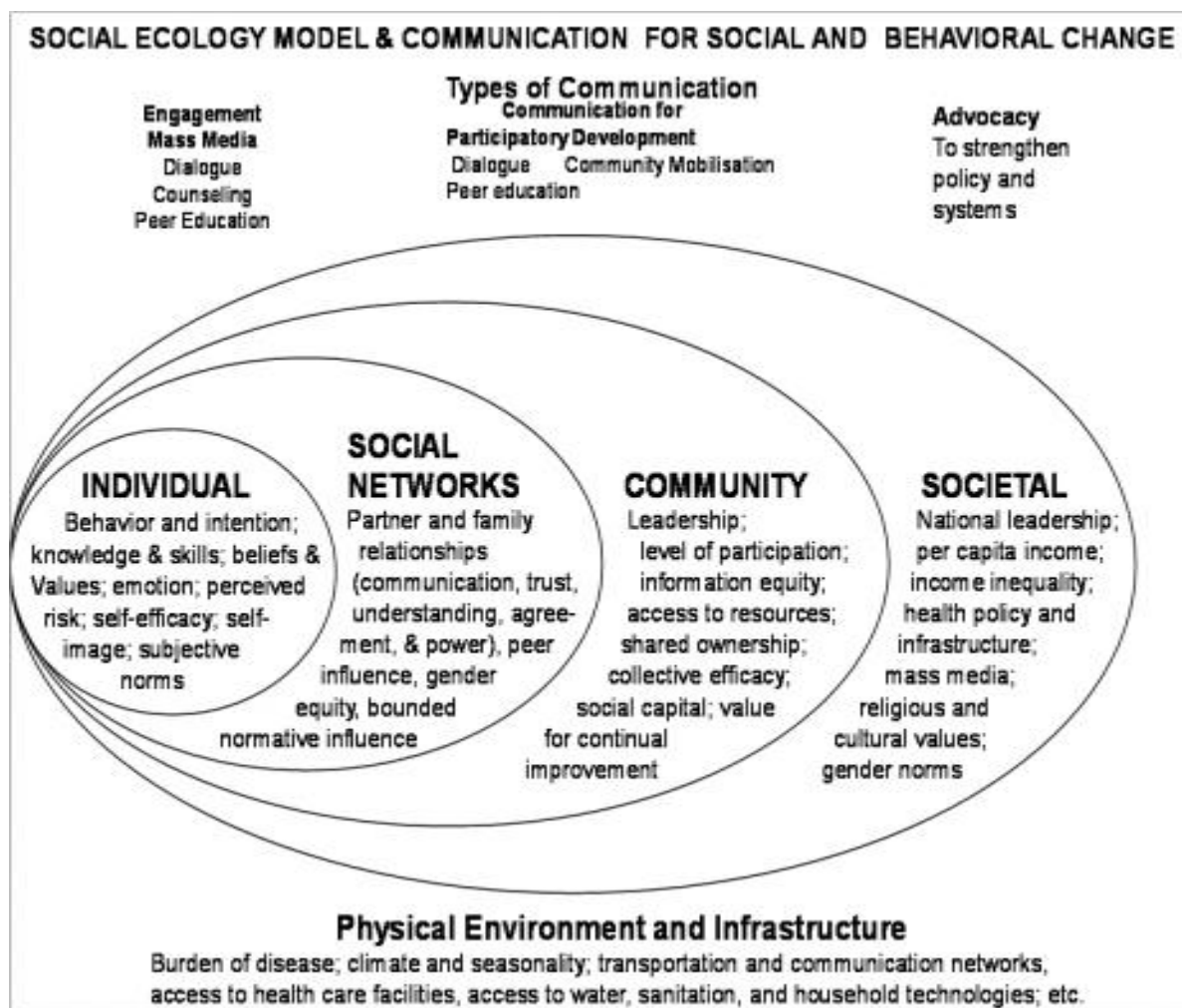


Figure 1: The Social Ecological Model for Communication for Social and Behaviour Change.

Therefore the SEMCHB is a guiding framework to understand the different levels that have the potential to promote health behaviour. It guides public health communication practitioners to design effective communication strategies that are able to impact the individuals and communities health behaviour (Storey *et al*, 2012). The framework on the connectivity of the various activities that occur with a system able to provides a guideline as to how one can assess health behaviour (Shipro *et al*, 1998). It is essential to explore the multiple levels of the SEMCHB because understating the entire context of the situation enables one to understand how certain decisions will influence the entire system.

The SEMCHB promotes communication for social and behaviour change through the engagements of mass media, communicating for participatory development and advocacy. The framework further replaces the interpersonal layer of the SEM with the social network level in the SEMCHB. The social network level draws its attention on the communication

relationships of partners extending to aspects of trust, understanding, power relations, and peer influence and gender equity. These factors surround the individual and have the potential to influence self-efficacy, skills, values and the beliefs of an individual or community.

The study is aware that the Ugu District has high bilharzia prevalence hence the DoH decision to implement a MTC at a District level. Further the SEMCHB (Kincaid et al, 2007) considers infrastructure as an element that contributes to social and behavioural change. In the Ugu District majority of the population is located in the rural communities where infrastructure is still developing. Poor sanitation and water resources contribute to the high prevalence's of bilharzias, since they are exposed to infested waters (Rollinson *et al*, 2001). The individual may be aware of the risk but the lack of resources will force the individual to expose themselves to waters that may be infested.

As discussed above, factors such as skills, attitude and knowledge were the previously foregrounded in evaluating behaviour change (Shipro *et al*, 1998). Contemporary thinking now also acknowledges external factors such as environment and socio economic conditions as crucial considerations in planning behaviour change programs (Burisk, 1988). The environmental setting that surrounds the individual has a significant influence on the individual's behaviour change (Connelly, 2002), for example, anti- smoking campaigns have realised that one should analyse the reasons for smoking and assist in providing coping strategies for smoking (Connelly, 2002). The modification of one's behaviour becomes difficult to resolve if the root of the problem is not addressed (Dougherty, 2004).

The SEMCHB can be used to plan, implement and evaluate public health campaigns that are aimed to challenge health topics such as smoking, obesity, bilharzia, anti- violence and cardiovascular health (Figueroa & Storey, 2011; Stokols, 1996). Social, physical and public environments are able to influence participation in public health campaigns. Understanding these factors in a community may allow for improvements in the planning for bilharzia intervention programs in communities (Stokols, 1996). The reviewing and analysing of the various phases may lead to identification of various leverage points that may create opportunities to improve public health communication strategies. The SEMCHB takes into consideration the external opportunities and constraints that can assist one to understand a problem (Figueroa & Storey, 2011). The framework encourages public health interventions to be environmentally centred as oppose to being individually focused (Figueroa & Storey, 2011). It has shown that interventions that consider the environment and community as

opposed to the individual alone have been able to capture the perceptions of a group as opposed to a single opinion. Hence these interventions have had more feedback that they can add to the work that they are doing (Naar-King *et al*, 2006). The framework acknowledges that poor service delivery or poor decision at community level impacts on the lifestyle of an individual. The influences of the impact could possibly result in the individual not continuing to adopt the desired behaviours change even if they have the self-efficacy to change their behaviour.

Conclusion

The SEMCHB remains the main framework used for the study. The SEM systematically views the various possible interactions that can impact the individual and the community at large. The EPPM, fear appeals, SCT and the HBM have been explored to indicate and explain reasons for the behaviour changes that people adopt. It interprets these factors that enable one to plan effective communication strategies that provide messages that are able to stimulate behavioural changes in individuals. Messages sent out need encourage self-efficacy so that people can adopt positive behaviour (Cardey, 2006). Behaviours are constantly being adopted and later people change back to their old behaviours, hence communication needs to provide information that will assist society to sustain their newly adopted behaviours. It is through emphasising methods whereby stakeholders learn to maintain stability and motivation to keep the behaviours they have chosen. It is through behaviour change that public health communication strategies can be a success.

Chapter Four: Research Methodology

Introduction

The purpose of the research was to understand whether learners were able to understand the information materials distributed to them. The scope of the study extended to exploring the reception of the information materials and tools used during the DoH MTC and understanding the role of the individual behaviour and social change theories within the SEMCHB (Kincaid et al, 2007) and SEM frameworks.

The data was collected through qualitative measures, since this study explores the perceptions of the information distributed during the MTC via the beliefs, perceptions and relationships that existed amongst the participants' socio ecological environments (Sallis *et al*, 2008). The study adopted a qualitative approach since it investigated the human communication component of a wider bio medically-oriented DoH MTC. Open ended and flexible data collection methodologies enhanced the interaction between the researcher and participants, thus providing opportunities for participants to elaborate in their own words (Kitzinger, 1995).

This chapter focuses on the methodological approach to collect and analyse the data. It further explores and provides reasons as to why these methods were selected as the most appropriate for this particular study. The chapter describes the research design, population sample, data collection tools, data analysis, ethical consideration and limitations.

Research Paradigm and Approach: Qualitative Action Research

Research is a replicable systematic investigation that identifies variables and examines the correlation between variables through data collection and analysis of results in order to generate empirical facts and conclusions within a particular boundary (Burn, 2009). Research can be conducted using qualitative, quantitative or mixed methods. This study is exploratory as it utilises qualitative techniques. Gary Shank (2002) defines qualitative research as “a form of systematic empirical inquiry into meaning” (Shank, 2002:5) further stating that it is a planned, ordered and public empirical inquiry, meaning research should be realistic (Shank, 2002).

The study was conducted using an action research approach, whereby research was reviewed and applied back into the project (Brydon-Miller *et al*, 2003). It is often implemented whilst

the study is underway and provides the study with an opportunity to enhance the work being implemented. Action research is a co-learning approach that encourages learning by participating in activities that include groups of individuals who have identified a problem and are working towards a solution. Action research has been known to:

[c]ontribute to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. Thus, there is a dual commitment in action research to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction (Gilmore *et al*, 1986: 161).

Action research can be participatory in nature and this form is thus called participatory action research (PAR). The value of the approach is in the generation of immediate solutions by critically reflecting on activities or materials being used (Kock, 1998) with the deliberate inclusion of research participants. PAR has a goal of making interventions to stimulate change by participating in activities that will assist in improving the current situation. It is an approach whereby the researchers actively work with the targeted audience to identify and explore constraints and opportunities that can help improve the current situation (Cornwell & Jewkes, 1995).

Participatory action research is a form of action research in which professional social researchers operate as full collaborators with members of organisations in studying and transforming these organisations. It is an on-going organisational learning organisational process, a research approach that emphasizes co-learning, participation and organizational transformation (Greenwood *et al*, 1993:175).

Both the researcher and the target groups are able to learn from each other during the data collection process. With regards to this study, the target audience's perceptions enhance the researcher's knowledge on how the MTC information materials are perceived in schools and communities. The review of the information was useful to gather the different opinions and recommendations from the audience. The information collected assisted in developing and improving the current information material. PAR studies are often targeted to the needs of a specific audience, hence this study is targeted around the need for the audience to receive accurate, reliable information about bilharzia that they are able to relate to (Greenwood *et al*, 1993).

Setting of the Study

From 2011 the Ugu District DoH has conducted an annual MTC to treat bilharzia in selected schools. The study is embedded and limited within framework of the bilharzia DoH MTC. This study is structured as a review of the information which was provided to learners at selected schools by the DoH MTC. The DoH MTC provided services such as free health information and treatment pertaining to bilharzia with the aim to add value to the health and welfare of community members. The DoH MTC works in partnership with academic institutions such as the University of KwaZulu-Natal, Oslo University Hospital and various other academic institutions to gather resources and ensure the success of the DoH MTC. As opposed to inviting learners to health institutes such as clinics and hospitals the DoH MTC travels to the schools to offer treatment and information. The units of analysis are the current DoH MTC materials, and the ways in which the targeted audience receive the messages from these materials which the current MTC uses; posters, pamphlets, consent forms and information desk, assembly meetings and class room talks to extend the information to the public.

The on-going action research review allowed the researcher to collect data that explored how the information was perceived. These perceptions were discussed in the light of best practices in strategic health communication as it relates to social change communication in order to offer recommendations for forthcoming MTC communication materials (Parker & Appleton, 2003). The analysis creates an opportunity for the audience to make recommendations that may have the potential to improve the current information materials. The study was requested as a measure to improve communication with the audience and discover what communication materials are needed to improve the DoH MTC communication strategy. The study is expected to make recommendations from the results obtained as to how the project can improve its communication with the public.

Study Sample

The study sample represents the fraction of the population about whom one is evaluating perceptions. This study purposively sampled three schools within the region of the Ugu District that were part of the DoH MTC in the year 2011. Purposive sampling can be used in qualitative research in “selecting units (e.g., individuals, groups of individuals, institutions) based on specific purposes associated with answering a research study’s questions (Teddle & Yu, 2007:1). Thus, purposive research intentionally selects participants who will provide the necessary information (Teddle & Yu, 2007, see also Maxwell 2007). Hence the need for the

researcher to understand the aims of the study in order to assess the type of participants they wish to include in the study (Teddle and Yu, 2007). This sampling technique enabled the researcher to make generalisations from the selected sample, and becomes useful when one aims to work with a synonymous group of people (Penrod *et al*, 2003) and in this study the researcher aimed to work with schools and individuals that have participated in the DoH MTC.

IsiZulu is the main language of communication in the rural outskirts of the district, hence most of the participants were Zulu and data collection was conducted in isiZulu. Perceptions were gathered from both male and female learners, although focus group discussions were gender based extending the participant's freedom of expression.

The table below provides a summary of the number of learners that were invited to participate in the study.

Table1: Interview and FGD study sample per phase for MTC material perceptions

Phase	Learners For SSI		Number of FGDs per phase	
	Male	Female	Male	Female
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
Totals	3	3	3	3

Selection of learners

Learners who participated in the FGDs and semi structured interviews (SSI's) were randomly selected at the purposively selected schools. The randomisation of learners allows learners to have the same probability of being selected to participate in the study (Congalton, 1991). Ralph Frerichs further describes random sampling as "[s]ubjects in the population are sampled by a random process, using either a random number generator or a random number table, so that each person remaining in the population has the same probability of being selected for the sample" (Frerichs, 2008:1). Before the selection of learners, contact was made with the various schools requesting their participation; fortunately all schools were

eager to participate. Once the headmaster had granted permission a teacher was allocated to assist the researcher in selecting the learners required to conduct focus group discussions and semi structured interviews. For the FGDs in each school the tenth female learner nearest to the door was selected in each grade, sub section A and for the males the 15th learners that sat opposite the door was selected in each grade sub section B to ask questions. Learners' and teachers' actions towards the MTC were observed prior and during the MTC.

Data Collection

The study aimed to explore the perceptions of high school learners through qualitative data collection techniques such as focus group discussions, semi structured interviews and participatory observations. The techniques selected assisted in exploring the perceptions of how learners received the information.

The data collection was separated into three phases; each phase reviewed information materials that were used to communicate with male and female learners between the ages of 13 to 25 years. The first phase included the review of current information that was given to learners at their schools. The information was reviewed through the conduction of two gender-based focus group discussions. The focus group discussions had of six participants and were held at the schools. Furthermore one male and one female learner participated in the semi-structured interviews. Once the comments from learners were captured they were edited and the information materials were revised, according to the comments from previous interviews. The second phase reviewed the revised information material through focus group discussions with one male and one female group and semi- structured interviews which consisted of one male and one female learner. A new group of learners from a different school reviewed and provided feedback on the revised information materials through two gender based focus group discussions of six participants and semi-structured interviews with one male and one female learner. The feedback was documented and the information materials were revised in order to conduct the third phase of the study. The third phase of the study made use of the information adapted in the second phase. In the third phase a review of the revised materials was conducted at a third school and the feedback was to be included in the forthcoming information materials.

Focus Group Discussions (FGD)

FGDs are a qualitative method of group interviewing that promotes a two way communication flow between the researcher and the participant (Kitzinger, 1995). It provides data that is captured from a social sciences' perspective (Holland & Garbarino, 2009). The discussions were facilitated via specific questions which are asked to ensure that the discussion does not go off the topic. The discussion is able to capture various perceptions and opinions hence the tool can be used to gather data for the research, evaluations and planning purposes (Basch, 1987). This study intentionally conducted single gender based FGDs, since in some instances females may not feel able to express themselves fully in the presence of males and vice versa (Kitzinger, 1995). Although questions guide the discussion, they should be conducted in a flexible manner so that participants are free to express themselves.

Researchers should have a specific framework or program that they will use to analyse their data (Bryman, 2008). In FGDs it is advised that the researcher listens, learns and tries to understand what the different people are saying (Basch, 1987). This study made sense of the participants' shared perceptions through the guidance of the SEMCHB (Kincaid et al 2007). The framework provided guidance in understanding the shared views of the participants.

Focus groups may allow the researcher to collect data that explores the insights and in-depth knowledge of the participants. The tools can assist researchers to understand many views as opposed to the single view obtained from conducting a semi-structured interview (Lederman, 1990). During FGDs researchers can observe how different people relate to various topics during the discussions. This can provide an indication of the sensitivity of the topic (Lederman 1990). A background study indicated that not all learners share the same views when it comes to bilharzia (Lothe, 2012). In some schools learners did not take offense when asked about the association of bilharzia and stigma. The researcher was, however, cautious when asking questions during the FGDs related to the association of bilharzia and HIV, since one does not want to introduce a linkage between bilharzia and HIV. All focus group were conducted in order to gain insights about how the MTC information was received and whether the information stimulated or encouraged behavioural changes, or whether it influenced the manner in which learners thought and talked about bilharzia.

The disadvantages for FGDs are that research may sometimes generalise the feedback from one FGD to a large population (Basch, 1987). A FGD may be used to understand people's

experience about the problems they face. This study used FGDs to understand the constraints and opportunities faced by learners regarding the communication strategy of the MTC. FGDs are not appropriate when one needs to ask sensitive and confidential information from the participants. It is often difficult to facilitate sensitive information due to fears of people being stigmatised or participants may feel that the information is too confidential for them to share in front of a group of people (Kitzinger, 1995). The study avoided stigmatising bilharzia by explaining the disease before data collection proceeded and explaining that anyone can get the disease. The study allowed participants to speak about generalised experiences if they felt uncomfortable when speaking about themselves.

Semi- structured interviews

Semi-structured interviews were used in this study to gain data on the perceptions of the information distributed prior to and during the MTC. An interview guide that includes open ended questions was used during the interview to gain data that was not influenced by other learners. A semi-structured interview is a non-formal interview whereby the interviewer does not follow a strict sequence of questions but does use questions that are able to guide the interview (Basch, 1987). The objectives of the tool are to collect qualitative information from the sampled population (Basch, 1987).

The flexibility of SSIs allows room for probing often going off topic so that the discussion may be more informal and comfortable for the interviewee (Dearnley, 2005). The flexibility of the questions helps create an environment whereby there is ease of communication. The reason to conduct SSIs was not only to provide an environment which promotion freedom of expression and learning, but also to provide an intimate environment for the learner to ask questions. Two-way communication between the interviewer and the interviewee needs to be maintained so that the interview becomes a learning experience for both (DiCicco-Bloom & Crabtree, 2006).

The semi structured interview provides more confidentiality than FGDs since they are more private (Dearnley, 2005). The tool was used to collect personal perceptions allowing learners to express sensitive information without being judged (Barriball & White, 1994). The SSI was confidential and the questions asked did not pose judgement onto the learner's perceptions of the information.

Before each SSI learners were given the opportunity to reconsider their decision on whether they still wished to participate or not, then the informed consent form explaining the reasons for the study was explained and learners were required to give written consent before participating. The interview sessions with all participants were recorded with an audio recorder in an enclosed environment and then transcribed and translated.

Participatory Observations

Participatory observation is a data collection tool that is widely used across disciplines of communication studies, sociology and other social psychology to capture insights or close familiarities within groups of people (Morris, 2003). Researchers are able to gain information through participating in activities and trying to understand the reasons for the behaviours and actions of a particular group of people (Lingard *et al*, 2004). The researcher was able to learn reasons for learners behaving the way they do and the challenges they experience in communicating effectively about bilharzia and the MTC. The tool is valuable when trying to understand the norms, events, relationships and ideas between people since it offers insights about the physical, cultural, social and economic contexts of a situation (Lingard *et al*, 2004). Researchers have the opportunity to place themselves in the participant's shoes, and thus they need to try and feel the feelings that are felt by the participants (Bourgois, 1998). Opportunities like these allow them to find reasons that may explain the actions and behaviours of the participants (Morris, 2003). The main disadvantage with using participatory observations is writing down all the information that is available (Lingard *et al*, 2004). Documenting the data may be challenging and requires the researcher to have a good memory that will allow her to document the data at a later stage (Lingard *et al*, 2004). The method is not only time consuming but it can also be intrinsically subjective (Morris, 2003). Participatory observations posed a challenge during focus groups since documenting the reactions of learners during FGDs interrupted the flow of the discussions. In the later stages the researcher documented the reactions of the learners after conducting the focus group discussion.

The DoH MTC conducted parents meetings at the different schools. Parents and guardians of learners were invited by the relevant school principal to attend the meetings. The researcher was privileged to attend some of the parents meetings. The main reasons for attending such meetings was to be part of the process of inviting parents or guardians to be part of the MTC and also to see the reactions they had towards the MTC. Furthermore observations of the learners' reactions were gathered at school playgrounds and classrooms. Learners'

observations were gathered in different environments so that one could get a broader understanding. In playgrounds learners are surrounded by a bigger social environment as opposed to a smaller classroom environment, hence capturing the reactions learners had towards the MTC under different circumstances would assist the study in understanding how learners perceive bilharzia and the MTC. The difference in the observations gathered is further discussed in the results and discussion chapter five.

Secondary data

Secondary data was used to provide a background understanding of the topic. The study contextualised the research questions and findings through a literature survey of related research that primarily focuses on theories of behaviour and social change communication, further exploring how these concepts are essential in encouraging sustainable behaviour change in communities and within the individual (Ang, 1990). Biomedical interventions that include communication strategies that aim to promote sustainable social and behavioural change have a greater opportunity of success in targeting and receiving good results in the community (Parker & Appleton, 2003).

The literature further explores examples of a MTC and the communication strategies implemented globally and how these have contributed to effective public health communication. The secondary research provided an understanding of some of the results obtained through the data collection phase. The study made use of secondary data obtained from other students that explored the DoH MTC. An example of this is Andre Lothe's (2012) "Treating Bilharzia among High School Pupils: A study of opportunities and constraints for treating Bilharzia among high school pupils in Ugu, District".

Data Analysis

The study made use of Stuart Hall's encoding and decoding model to analyse the data. The encoding and decoding model is useful in the analysis of the study, as my research is interested in perceptions. The model was used in association with three forms of readings to make of the data collected. The study considers the individual and social network levels of the SEMCHB. (Storey & Figueroa, 2012). The analysed data is discussed in Chapter Five of the dissertation.

Encoding and decoding of information

Stuart Hall makes the argument that the messages communicated to an audience are not only dependent on the sender of the message (Hall, 1974). The messages sent to the audience are

not always transparent when they reach the audience. The process of encoding a message and decoding the message provides an opportunity for the message to be altered before it can be decoded by the receiver. Encoding of messages creates a system of coded information that will produce messages that may be understood by the audience (Hall, 1974), whilst decoding of information is inclusive of how the information was received and understood (Hall, 1974).

The four independent processes involved in encoding and decoding of messages are production, circulation, use and reproduction (Hall, 2001). The first step in the circuit of communication is the production of the message that is targeted to the audience. Once the message is produced circulation begins, whereby the perceptions of how the individual perceived the communication materials were considered (Hall, 2001).

The perceptions of the social environments that surround the individual affect the individuals' belief system and contributions to how the individual makes decisions (Hall, 1974). The study is considers that learners perceptions have a significant influence on the DoH MTC and their decisions to participate in the MTC. The study further explores how the decoding of information has been influenced by their environment, their beliefs and experiences and the communication materials that were perceived to be the dominant ideology.

Hall's theory consists of three positions that the audience can occupy in relation to the dominant ideology namely, dominant, negotiated and oppositional. Hall uses the word "dominant" and not "determined" because it is always possible to order, classify, assign and decode an event within more than mapping. But we say dominate because there exists patterns of preferred readings, and these both have institutional/ political/ ideological order imprinted in them and have themselves become institutionalized" (Hall, 1977: 513).

The data analysis will view the patterns of how the data was decoded from the participants. The dominant message may be identified and acknowledged but the mixture of other messages may create discussion on accepting and rejecting the message, hence the communicated message being in a negotiated position (Hall, 1977). The oppositional position is when the targeted audience is able to understand the precise meanings of the message (Hall, 1974). This study it investigates whether learners hold the dominant, negotiated or oppositional position in relation to the MTC materials. The study aims to understand whether learners were able to relate to the communication tools.

Ethical Considerations

The study is embedded within the DoH MTC which has ethical approval from the Department of Health, Pietermaritzburg, KZN, and the Biomedical Research Ethics Administration, University of KwaZulu-Natal (UKZN). This study itself has received approval from the University of KwaZulu-Natal Research Ethics Committee.

Participants were required to give written informed consent before participating in the study. The consent form clearly elaborates on the specifics of the study and seeks permission to participate in the study (see Appendix five). Formal consent to qualitative research is essential for the participant, since it not only shows that the researcher has respect for the participant but gives information about the risks and benefits of participating in the study (Malaty & Graham, 1994). The informed consent acts as a tool to ensure that the participants are aware and understand the specifics of the study and provides them with the opportunity to make a decision to be part of the study or not (Beck & Ajzen, 1991).

The researcher carries the responsibility of ensuring confidentiality where indicated by the interviewee/participant. Therefore, the study conducted all interviews in locations that provided confidentiality. Confidentiality during data collection assisted participants to express themselves more freely, thus benefitting the study. A tape recorder was used to record the interviews for transcribing purposes and it allowed the interviewer to focus on the participants, as opposed to writing down the responses of the participants. Participants requested that their names and school names remain confidential, hence throughout the dissertation participants' names and their respective schools have not mentioned.

Limitations of the study

The study was limited to the schools in the Ugu District that participated in the 2011 DoH MTC which was conducted by the Ugu Department of Health. The rationale behind this is that the study required students that were part of the previous MTC so that they could contribute their experiences. To collect data males and females were selected at each school to participate in their FGD or a SSI and the learners were not allowed to participate more than once in the study, since this would open an opportunity for duplication of information or false information.

The answers obtained throughout the study were merely the perceptions of the participants and hence one cannot determine how factual they may be. As explained by the SEMCHB (Kincaid et al, 2007) individuals have the potential to influence their peers, hence the

perceptions of the various participants gathered through the focus group discussions may have been influenced by other participants in the focus group discussion. One may expect that perceptions gathered through SSIs are less likely to be influenced by peers, since the environment where the SSI was conducted has privacy.

The limitations of the study did not negatively affect the validity of the study, since the study required participants that have been exposed to the MTC to participate. Selecting participants that have been exposed to the MTC was good for the study, since the participants were able to answer the questions related to the MTC. Although there were certain limitations, the study appeared to be valid and reliable based on certain measures as discussed below.

Validity of the study

Data triangulation was used as a measure to ensure the validity and reliability of the results derived from the study. Triangulation is an approach that uses multiple methods to enhance the validity or credibility of the study (Hussein, 2009). The use of FGDs, semi-structured interviews and observations strengthened the reliability and validity of the information received.

Marion Joppe (2000:1) states that reliability is:

The extent to which results are consistent over time and are an accurate representation of the total population under study is referred to as the reliability, and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable .

The multiple qualitative data collection tools assisted in ensuring validity in the study. Joppe (2000:1) defines validity of research as follows:

Research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit “the bull’s eye” of your research object? Research generally determines validity by asking a series of questions, and will often look for answers in the research of others (Joppe, 2000:1).

The study will ask a series questions about the information they have received with regards to the MTC and bilharzia, such questions may request learners to share some of the knowledge

they were given by other researchers or the DoH MTC. Information becomes saturated when the response of participants is continuously very similar.

Chapter Five: Results and Discussions

Introduction

The chapter aims to provide an analysis and interpretation of the results obtained during the research collection process. The results are divided into two sections. Firstly, the chapter discusses the perceptions learners have of the DoH MTC communication/information materials. The ways in which the learners decoded these materials is discussed with the use of Stuart Hall's (1980) three forms of reading. Exploring as to whether the learners held a dominant, negotiated or oppositional reading towards the intended message reveals their perceptions towards the strategy. . The second section elaborates on Behaviour Change Communication within the DoH MTC taking into consideration communication theories that explore health decisions and behaviours.

Section 1: Participants Reception of information materials and tools used during the DoH MTC

The information materials

The information materials are designed to educate, create awareness and increase the spread of bilharzia information. As previously stated, the information materials used in the Ugu DoH MTC included the consent form (see appendix five), pamphlet (see appendix six), and the poster (see appendix seven). This chapter discusses the perceptions as to how the information materials were received by the participants making use of Hall's encoding and decoding model as a framework of analysing the data. The perceptions of learners were gathered through focus groups, semi structured interviews and participatory observations. The chapter makes reference to the social ecological model for communication and health behaviour which is referred to as the (SEMCHB) (Kincaid et al, 2007) to explain the findings.

DoH MTC consent form

The consent form serves as a communication channel between the parent and the DoH MTC. It provides parents and the community with an opportunity to gain information about the MTC and bilharzia. The consent form also serves as an indication to the community that the project respects the community by seeking their consent. The SEMCHB considers parents as valuable stakeholders and they are part of the social network level of influence (Storey & Figueroa, 2012), since their participation in the MTC will enhance the knowledge about

bilharzia in the community. The health belief model acknowledges that parents have the potential to influence their children thoughts and actions based on how influential and trustworthy they are perceived by the individual. Not all consent forms that were distributed reached the parents since “I signed my form during the information desk so I didn’t take it home” (Participant 40/ FGD/ 17/10/2012). Learners were encouraged to take the consent forms home for their parents to sign although some learners took sole decisions. In such situations learners recognised and negotiated the need to inform parents about their decision, although some did not see the need for their parents to sign the forms when they are able to sign it themselves. Hence learners often found themselves in a negotiated position whereby the preferred message was not fully accepted (Hall, 1973). Thus this initiative resulted in some learners leaving parents out of the decision making process (Participant 16/ FGD/ 10/11/2012). The opportunity for the DoH MTC to inform the parent was thus interrupted.

The DoH MTC distributed consent forms to all participating schools. Learners and parents sometimes filled in the required personal details incorrectly. Additional telephone cost and time was required to seek the missing information in order to ensure the learner received the treatment resulting to the increased operational cost of the DoH MTC. The preferred messages sent out through the consent form were considered to have left learners in the negotiated position. Learners accepted that bilharzia is a problem in their community but often question whether the disease affects them. The overall perception was that the campaign should be focused at younger learners as it was felt that the disease only affected younger children.

The DoH MTC put its trust in the school teachers to distribute the forms to learners. Yet learners stated that they had not received the forms. An abundance of reasons such as absenteeism, poor distribution or failure to admit losses of the consent form were reasons why the forms did not reach the learners or were not returned to the MTC (Participant 29/ FGD/ 16/10/2012). Consent forms are distributed more than once at a school because they are often misplaced or even reasons such as “I lost my form many times” (Participant 14/Interview/ 27/09/2012). The second distribution of consent form has helped learners that wish to be treated but had lost or misplaced their forms. It also provided the learners that were absent with an opportunity to consent.

Learners with illiterate parents felt that it was important for them to have a dominant understanding of the preferred readings because they have the additional task of reading and

explaining to their parents “I read the consent form for mother. I must understand it so that I can tell her what I read” (Participant 7/ Interview/ 26/09/2012). In such situations the social networks level of the SEMCHB becomes important as the learners read and share the knowledge with their parents at home thus extending to their social networks (Kincaid *et al*, 2007).

On the other hand a learner stated “I don’t like reading and I am lazy to read for my grandmother, so I sign it myself” (Participant 8/ FGD/ 27/09/2012). In this case it is evident that some learners held an oppositional reading towards the preferred message which encouraged them to share the consent form with their parents.

DoH MTC pamphlet

Pictures may plant thoughts in people’s minds and people are able to make statements about what the individual has observed (Owens & Nowell, 2001). The discussions about the pamphlet amongst learners have assisted to broaden learner’s perceptions of bilharzia. Visuals such as pictures form a significant proportion of the information pamphlet and this minimises the time needed to read the pamphlet (Mogford *et al*, 2011).

The cover picture on the pamphlet (see appendix six) may seem to have contradicted the message the DoH MTC promotes. The preferred message was that people from all ages can get infected with bilharzia and that treatment is available. However; the cover picture of the pamphlet depicts a mass drug administration conducted by educators in a rural primary school. Hence the visual connoted that bilharzia is a children’s disease. The use of children on the cover page had an influence in promoting an oppositional reading that bilharzia as a children’s disease and learners felt “[w]hen I saw the picture I thought it was for grade 8s” (Participant 29/ FGD/ 16/10/2012). Some learners disregarded messages in the pamphlet, feeling that the pamphlet was not targeted to them. Such learners were in a negotiated position, thus preferred to other forms of communication (Hall, 1980). The researcher observed that high school learners often feel uncomfortable to talk about bilharzia since it is a ‘children disease’ and expressions such as “they will treat you like a child if you talk about bilharzia” made learners more cautious about what they say in relation to bilharzia because their words have the potential to affect their image at school (Participants 42/ Interview/ 17/10/2012). The cover picture illustrates that treatment can be conducted in schools, although the cover picture consists of primary school learners. Some learners found themselves in a negotiated position (Hall, 1980), since they were in agreement with the

information but felt that it was not targeted to them as a result the information was reproduced to younger siblings (Participant 16-19/ FGD/ 10/10/2012).

Bilharzia is known as a disease that affects people living in rural areas, although it has been noted that it is not only people who reside in rural areas that get bilharzia (Cetron *et al*, 1996). It has been stated that the picture promotes bilharzia as a rural disease that is meant for black people and this is not the preferred reading the image intended to portray (Participant 35/ Interview/ 16/10/2012). As such an oppositional reading was held by some learners who suggested that the cover page should not include pictures of people but rather use pictures of logos or health facilities (Participant 21/ Interview/ 27/09/2012). The visuals used should aim to allow readers to increase their understanding of the preferred message (Hall, 1997) and minimise any potential risks of creating or promoting stigma in the school and community (Mogford *et al*, 2011).

As required by DoH the bilharzia MTC project uses qualified nurses to distribute treatment (DoH, 2004). Learners, however, became confused and “thought that I will get the tablet in class from teacher” (Participant 3-6/ FGD/ 26/09/2012). They still had the perception that teachers would distribute the treatment even if it was verbally emphasised that nurses from the DoH would distribute the treatment (Participant 3/ FGD/ 26/09/2012). Therefore one needs to be conscious of the visuals used in printed mass information materials, since one may not always be fortunate to have the opportunity to explain the pamphlet to the audience (Nutbeam, 2000). Pictures used in the materials need to affirm the intended message in a relatable way (Nutbeam, 2000). The aim of the preferred message is for learners to understand the potential benefits of the MTC DoH and to initiate cues to action, an important component of the Health Belief Model (Rosenstock *et al*, 1994). When a reader is unable to decode the message according to the preferred message they began to have mixed messages that lead to misunderstanding the information or the spread of incorrect messages (Cropley, 2004). Learners might have a dominant reading of the precautions and prevention methods they need to adopt but lack the motivation to adopt these practises. The Health Belief Model which is incorporated in the individual level of the SEMCHB (Kincaid *et al*, 2007) considers that the potential benefits of adopting a positive behaviour contribute in the decision making processes (Hochbaum *et al*, 1952).

The pamphlet is one of the materials that learners are able to circulate amongst each other and their families (Participant 37/ FGD/ 17/10/2012). The information team is not able to provide

every learner in the school with a pamphlet but learners are able to distribute the pamphlet to their social networks such as friends or family members (Participant 37-41/ FGD/ 17/10/2012). During A female FGD learners reported that after the information desk, if their friend did not receive the pamphlet they were willing to share it with them because they know and trust that their friends will not mock them for participating in the info desk (Participant 26/ FGD/ 11/10/2012). There is a stronger willingness to share information materials amongst the people they trust as opposed to those they may not trust. Learners feel more comfortable to communicate about their health status in an environment that they feel is safe to reproduce their understandings of the message (Hall, 1973) “I won’t just tell anyone about my health” (Participant 7/ FGD/ 26/09/2012). This ‘safe’ environment forms part of the interpersonal relationships that may be highly dependent on the trust levels amongst the individuals because learners communicate their personal information to their best friend only (Kincaid *et al*, 2007). Trust levels are higher in interpersonal relationships as opposed to community relationships. Trust has been a motivation factor for learners to reproduce message with trusted friends and take positive health decisions regarding the DoH MTC (Kincaid *et al*, 2007).

The distributed pamphlets were able engage learners into informal discussions that often lead to debates that would influence their decision on taking treatment. Human health does not only affect the individual but also the other individuals around them. Situations such as “when I saw that she was sick I thought what if I also get sick. Then I became scared to take the tablet” (Participant 9/ FGD/ 27/09/2012). In these informal discussions learners share how they were able to decode the preferred message and how they felt about the message. However, a female FGD that had the strong will to receive treatment were not easily discouraged from participating in the MTC because they do not want to suffer from the long term symptoms of bilharzia such as “I want to have babies one day” (Participants 40 / FGD/ 20/10/2012). Fertility seemed to be a motivational factor for learners to take bilharzia treatment, as they fear the potential danger of not being able to have children. In the male FGDs fertility was more of a highlighted topic, since they believed a male must have kids to spread his surname. The health belief model explains that cultural beliefs contribute to health decisions taken by individuals. In such circumstances cultural beliefs and norms within the individual level of the SEMCHB have been able to influence learners’ decisions to take the treatment. Their high perceived self-efficacy concerning their health prevented the negative information communicated by their peers from affecting their personal health decisions

(Witte, 1997). Learners with low self-efficacy who were surrounded by peers or family member which form part of the learners' social network that did not support the MTC often tended to have negative attitudes and perceptions towards the MTC.

The fear of experiencing "painful" side effects has become another major reason for learners avoiding to take treatment (Participant 14/ Interview/ 27/09/2012). While knowledge of the potential side effects is important to impart to the learners, the complexity of this health situation becomes apparent when interpersonal information about the side effects may contribute to participants fearing the treatment. The various backgrounds and experiences of learners contribute to how they decoded messages (Hall, 1973). A learner's current situation and the social network that surrounds them will influence how they accept the message. Well known learners in the school that are not supportive of the MTC could scare and provide incorrect information to their peers. Younger learners may believe or feel pressured by their seniors at the school, resulting in the decision being influenced by the pressures they are experiencing (Participant 9-13/ FGD/ 27/09/2012).

The possibility of experiencing side effects was explained in the materials to create awareness that one may have minimal reactions to the medication. Providing this allowed learners to prepare themselves for both the physical side effects of the medication, as well as the possible mockery that is sometimes targeted at people on the medication (Johnson, 2011). A learner's perception was "I know that when I drink it I will get sick but because I know I have bilharzia I will take it anyway" (Participant 37/ FGD/ 17/10/2012). This action also provided a level of trust and showed integrity, learners feel that "it is good that I know that I will get sick, because if you don't tell me I will get angry and never listen or talk to you again" (Participant 42/ interview/ 17/10/2012). The statement indicates that learners may have a dominant understanding of the possibility of experiencing side effects and understand the perceived severity and threat of bilharzia and were willing to take the treatment despite possible side effects. Their knowledge acquisition has made them realise the importance of taking the treatment. The learners' understandings may be shaped by their experiences and the experiences of their peers (Skinner *et al*, 1999). The understanding of perceived severity of bilharzia can be motivated by the cues of action such as advice from their social networks. The health belief model acknowledges that reasons for health behaviour patterns can be due to the influence of peers (Skinner *et al*, 1999).

Language barriers presented a challenge for learners to decode the preferred message being (Mogford *et al*, 2011). In rural community schools not all learners were able to understand the English version of the pamphlet. The team received many incorrect quiz answers from the English version of the pamphlets and more correct answers for the isiZulu version. In such cases language became a barrier for learners to decode the information they read, because learners understood the isiZulu version because the language was their mother tongue (Hall, 1973). Learners were able to share the pamphlet better if they had a dominant understanding of the reading (Hall, 1977). The female participants were more likely to reproduce messages from the pamphlet with their family members that they trusted as opposed to the males, since the males felt uncomfortable to share information regarding bilharzia since their main explanation was “it’s painful when you pee” (Participant 15-27/ FGD/ 11/10/2012). This communication challenge prevented some of the male learners to reproduce messages even if they had a dominant understanding of the preferred message. They expressed it is not common and they would rather discuss such topics with individuals they trust and have close relationships (Participant 15-27/ FGD/ 11/10/2012).

Pamphlets were able to reach households and community members since some of the learners were motivated to take the pamphlet home and keep them in their rooms and unintentionally other family members come across them and read them. Learners felt challenged when asked to explain how the snail acts as a secondary vector host for bilharzia (Participant 5/ FGD/ 26/09/2012). This made learners feel as if they did not know much by saying “it’s hard to explain to someone when you don’t even understand properly” (Participant 13/ FGD/ 27/09/2012). Hence, learners felt uncomfortable to reproduce message that were unclear to them (Hall, 1973). The lack of clarity in the pamphlet decreased learners’ ability to reproduce and communicate about bilharzia. Few in the study population appeared able to influence their peers simply because such learners understood the possible dangers bilharzia can cause and hoped to encourage positive behaviour change amongst their loved ones (Bandura, 1971).

DoH MTC poster

The poster (see appendix seven) is used with the aim to increase and enhance learner’s knowledge regarding bilharzia. Visuals in the poster are intended to assist readers understanding and fill in the missing words in the individual’s mind (Ronski *et al*, 1994). The location of the poster differs for each school, since schools are built differently – but generally it is placed on the school’s corridors. The MTC team was responsible for placing the poster on the school walls, since it had been previously noted that not all schools

displayed the posters in visible locations when the task was left to them. All learners need to have visual and unrestricted access to the poster at all times (Ronski *et al*, 1994).

The majority of the posters were displayed in the school premises and, learners suggest that posters be displayed in centralised locations outside of school areas. Posters that were displayed in the staff room and Life Orientation classrooms have been criticised for not being easily accessible to the learners, especially learners that did not wish to be seen near the staff room or office areas (Participant 28/ interview/11/10/2012). Socialising with learners from other schools in the community is a norm for school learners after school hours, hence questions such as “why don’t you put your posters at the tuck shops outside school, community halls or even libraries because that is where we often go after school to meet with our friends from other schools?” (Participant 37-41/ FGD/17/10/2012). Public exposure of the poster at centralised locations is beneficial since learners from other schools and community members will be exposed to the poster, and as a result the information will not be limited to learners at a specific school, but the information will be reproduced to the community at large.

The poster is mainly designed to capture the attention of high school learners, although learners felt that it should relate to a larger target audience. Adults should be able to relate to the poster since there was a chance that they would see the poster and such opportunities should not be taken for granted. Parents often come to the school or get invited to participate in activities and during such occasions they may be exposed to the poster and read the information learners felt that they are “ unable to relate to it, they may lose interest in attempting to read the poster” (Participants 23-26/ FGD/ 11/10/2012. Parents have not been exposed to the poster during parents meetings, and when seeing the poster at a school there was no one to explain the information to them. Hence the poster should provide sufficient information for them to be able to fully understand the transmission cycle of bilharzia and the importance of the MTC. Parents form part of the social networks in the SEMCHB and the social networks are able to influence the individuals decision (Storey & Figueroa, 2012). Allowing more parents to understand and have sufficient information about the MTC will create an opportunity for parents to encourage their children to participate in the MTC, and parents will share this knowledge with other parents at the school or in the community.

Posters have the capacity to improve biomedical interventions by being part of the communication strategy used to reach out to the public (Sharf, 1995). Poster communication

has been widely used to communicate about breast cancer (Sharf, 1995). Including informative materials such as methods of diagnosis, available treatment, and prevention measures can assist in the receiver to gain a broader understanding and eliminating the negative beliefs and misconceptions that surround the disease (WHO, 2011). The main message that the poster aims to communicate to the public is awareness of how one can contract bilharzia, the transmission cycle of bilharzia and how it can be treated for free through the DoH MTC which may take place at the school.

The praziquantel tablets are displayed on the poster with the intention of giving learners an idea of what the tablets look like, to try and minimise any form of shock that may be potentially caused by the tablets. Learners whom feared drinking tablets were found in an oppositional state, they failed to understand that the intention was for them to be familiar with the visual of tablet. Their perceptions focused on the size of the tablet, hence they became discouraged and lost the motivation to receive treatment. The picture of the tablets resulted to comments such as “Ha they are so big and you drink so many” (Participant 14/ interview/ 27/09/2012) were made by learners. In this situation the picture of the tablets served as an unintended fear appeal which had a negative influence on the learners, especially those who fear taking tablets and have low self-efficacy levels. Individuals with low self-efficacy were often easily discouraged from adopting the encouraged behaviour change and participating in the MTC and this was often the case when it came to learners receiving treatment during the MTC (Witte, 1994).

The poster does not explain the available treatment used to treat bilharzia; it rather focuses on the transmission cycle of the parasite which has provided explanations to learners regarding how the schistosome worms get inside the body. Confusion such as “how does that worm get inside me” still circulate the school grounds (Participant 7/ Interview/ 26/09/2012). The poster has been criticised for not providing detailed information because learners felt “they “don’t understand everything completely but get the big picture” (Participant 22/ FGD/ 11/ 10/2012). The brief statements do not provide sufficient information for a person to have a full understanding of bilharzia “you need to write the information as if you are writing for someone who has no clue about what bilharzia is” (Participant 31/ FGD/ 16/10/2012). It is said that it lacks sufficient information hence there is a question whether the message is able to motivate self-efficacy (Bandura, 2004) and behaviour change. Elaboration on how the snail acts a secondary vector for the bilharzia disease is needed, since learners fail to see the link between the snail and bilharzia. The incomplete message limits the learners’ ability to

circulate the preferred message as a result the dominant reading of the message is disrupted (Hall, 1977).

Learners are able to decode the content of the preferred message of the poster. The poster has influenced learners' lives because it indicates how learners can get bilharzia and how they can treat it (Participants 37-41/ FGD/ 17/10/2012). It created awareness of the activities learners should refrain from namely urinating and defecating in rivers. Learners were aware of the activities they should refrain from but continued to face challenges in refraining from such activities. "Doing number one [urinating] and two [defecating] can be easily stopped but it's hard when you say that I can get bilharzia from washing clothes because I use the river to wash my clothes. I cannot stop washing my clothes" said a learner in a focus group discussion (Participants 22/ FGD/ 11/10/2012). Discussing the change in behaviour practices lead learners into a negotiated position, the information was accepted, but challenges were experienced when one had to practise new behavioural patterns.

Learners suffering from side effects of treatment attracted a lot of attention from other learners. These learners were often laughed at, or in very few cases learners felt empathy towards each other. For most of the cases, it is what learners say to each other that makes experiencing side effects much more unpleasant. Statements such as "I told you", "what were you thinking" or "that's what you get for doing things you don't know" it is such statements that make learners fear to take the treatment (Participant 22-25/ FGD, 11/10/2012). These statements not only discourage learners from taking the treatment but learners also conveyed these messages to other learners taking the consent form and the pamphlet. The continuous spread of negative information amongst learners grew rapidly in the school and this led to learners wishing to take the treatment but fearing the comments that they will receive from their peers (Kalichman & Simbayi, 2003). The information provided to learners informed them about the side effects but does not provide guidelines on how they can avoid focusing on negative behaviours. Without these guidelines self-efficacy cannot be encouraged if going on the definition of self-efficacy as the perceived ability to perform an action. The information limited learners to understanding what they can do if they experience side effects, hence learners made oppositional assumptions about the side effects thus negatively impacting on the MTC.

Communication tools

South Africa is a diverse country that consists of 11 official languages (Ugu District Municipality, 2011). KwaZulu-Natal is considered the Zulu Kingdom where isiZulu is the dominant language spoken in the Ugu district (Ugu District Municipality, 2011). Communication requires learners to be comfortable in expressing themselves (Pettifor *et al*, 2005). The public was informed verbally in isiZulu, a language which the audience was able to understand with ease, thus minimising misunderstanding amongst the audience. Informing participants through spoken communication is one of the MTC's communication approaches. The different forms of communication used by the bilharzia MTC programme are presented and analysed below.

The Assembly Meeting

The DoH MTC conducted 40 assembly meetings in different schools in the year 2012, which formally introduced school staff and learners to the DoH MTC. The presence of senior staff members created a sense of trust amongst the learners, illustrated in comments such as "I feel better when I see that there are doctors and that they are not just playing with us" (Participants 26/ FGD/ 11/10/2012). The ethical and legal approvals are provided to the headmasters before the assembly meetings, and this has enhanced the trust relationship between the school and the DoH. It has also contributed to assuring the school that the study is reliable and ethically approved.

The assembly meetings were conducted in the mornings and made use of a linear (top down) approach to inform learners of the disease and motivate learners to participate. This one way communication approach allows the communicator to transfer information without gaining input from the receiver. In an assembly meeting the approach was appropriate since there was a large audience and it was difficult for the communicator to engage in meaningful discussions. The time allocated to introduce the MTC was limited, therefore the communicator was required to selectively choose the information that they would present to the school. The top down linear approach limited the amount of learning as it did not encourage two-way communication (Quarry & Ramirez, 2009). The approach forced learners to take the information as it is as there were unable to negotiate the message with the sender. The audience was unable to make comments, and therefore the facilitator could not learn and gain feedback through listening to what the audience had to say (Quarry & Ramirez, 2009).

Learners who stood in front were able to hear and try to decode the messages communicated through assembly meetings (Participant 38/ FGD/ 17/10/2012). Learners that were willing to

listen during the assembly meeting were able to understand the perceived severity and the benefit of receiving treatment and utilised interpersonal communication with their peers to try and share the message (Hochbaum *et al*, 1952), statements such as “I talk to my friends about what I heard and some of my friends after the assembly meeting on their way to classrooms learners often ask what was the bilharzia people saying” (Participant 9-12/ FGD/ 27/10/2012) were made. Some of the learners that did not hear the message communicated therefore depended on word of mouth information which was dependent on what the other learners learnt and how they perceived the information. The reproduction of such messages depended on the beliefs and experiences of their friends allowed them to decode the message (Hall, 1980). Hence the message received through word of mouth often included the perceptions of their friends.

The SEMCHB (Kincaid *et al*, 2007) acknowledges that context influences how the receiver decodes a preferred message from the sender. The distance between the sender of the message and the recipient can be wide during the assembly meetings and as a result the attention of the learners is easily distracted. “I find it difficult to concentrate if I am unable to see the person talking to me”, “I like to stand at the back in assemblies to see and that is why I don’t hear her” (participant 22-34/ FGD/ 11/09/2012). The environment during the assembly meetings provides a challenge for learners to fully understand what is being said (participant, 5, interview, 12/09/2012). The ideal environment assembly meeting is for learners to be silent and listen, but this was often not the case. The main challenges faced were distance from the speaker and the noise level during assembly meetings. The distance and noise combined decreased the chances of the individual learner hearing what was being said. Noise pollution resulted in a communication breakdown between the sender and receivers of the message (Hall, 1977). The message was not being transferred to the receivers resulting in the learners not focusing during the presentation; and the obstruction of their view of the speaker has resulted in learners losing interest in what was being said. Hence the environment for some learners became unfavourable for conveying messages to encourage precipitation. The physical environment influenced how recipients received the message (Hall, 1977). The DoH MTC team did not conduct assembly meetings on rainy days because just environments were less like to get the attention of the recipient, because the learners were cold and wished to go back to their classrooms.

The Classroom Talk

The individual surrounded by a smaller audience, mainly their peers they are able to express themselves more freely due to the environment being safer (Barriball & White, 1994). Classroom talks are conducted in small environments provided opportunities for learners to response in a much freer environment. A learner expressed herself stating “I can talk more in class and I will never ask a question in assembly because I know they will laugh at me” (Participant 15/FGD/10 October 2012). The enclosed environment allows for the individual to make decisions without the direct influence of the community. The small environment of the classroom talk limits the interrupts that the message can experience (Barriball & White, 1994). A two way communication approach is used to facilitate the short discussion (Innvaer *et al*, 2002). The process encouraged learners to ask questions (Innvaer *et al*, 2002), so that they were able to clarify what they did not understand about the MTC and bilharzia. Normally they are conducted once an assembly meeting had been done in a school, so that learners have the opportunity to clarify and ask questions related to the information provided at the assembly meeting.

Classroom talks were the most preferred oral method of communication through which learners wished to be informed about the MTC “I prefer a classroom talk because there are not many people and noise so I can hear the lady properly. I also like them because I can ask questions and they won’t laugh at me” (Participant 42 / Interview/ 17/10/2012). The method was preferred because of the small audience that allowed them to hear the messages more clearly and accurately (Phetla *et al*, 2008). Learners felt that they were able to negotiate the messages that were not dominant to them. Negotiated codes may be due to various background experiences of the learners (Hall, 1973), the ability for learners to ask questions has provided motivation to consider adopting new behaviours. The classroom talks operate on the social network level of the SEMCHB. At this level learners felt free to express themselves and asked question because they had close relationships and understood their classmates “I don’t take it seriously when my friends in class laugh at me because it is not serious and she won’t laugh at me forever” (Participant 30/ FGD/ 16/10/2012). The majority of the learners had friends within their classroom and they would not feel scared to talk about bilharzia in the presence of their classmates, although the situation changed once they are exposed to a larger audience. This freedom allowed many learners to seek clarity about issues they do not understand thus reducing the misconceptions surround the MTC. One participant stated “I wish someone would come into our school and speak to the girls in our grade alone

and also talk to the boys of one grade. In this way we will be able to hear and understand better” (Participant 4/ FGD/ 26/09/2012).

The presence of teachers during classroom talks made the process more efficient. The researcher observed that a positive teacher who has a dominant understanding of the preferred message was able to keep the learners calm and attentive and some teachers took the initiative to encourage learners to ask questions at the end of the talk. An observation made by the researcher was that in some cases the teachers asked the first question as an approach to make the learners feel more secure to inquire about bilharzia and the MTC. The teachers attempted to encourage the behaviours that would persuade the learners to refrain from activities that may expose them to bilharzia. The teacher formed part of the social network (Kincaid et al, 2007) of each learner and had the opportunity to form trusting relationships with the learners, hence learners may trust the information they receive from their teachers. The learners observation were that teachers tend to make a summary of the information communicated during the classroom talk, and this had assisted learners to grasp the important information communicated during the classroom talk (Participant 23/ FGD/ 11/10/2012).

Participatory observations during classroom talks had allowed the researcher to observe the attitudes of learners towards bilharzia and the MTC. The interpretation of the preferred message changed according to their age. As they get older, their experiences influenced their views regarding bilharzia change “I did not care much about bilharzia while growing but if I had bilharzia now I would not tell my friends or mother” (Participant 10 /FGD/ 27/09/2012).

The primary perception amongst learners was that one gets bilharzia through swimming and therefore bilharzia has been stigmatised as a children’s disease. Observations made by the researcher in classroom talks were that learners in the lower grades tended to listen eagerly about the disease, whilst learners in higher grades paid less attention. Learners in higher grades held an oppositional positions since they did not associate themselves with recreational water activities. Learners who no longer swam had difficulty in believing that they may have bilharzia. Statements such as “I don’t have bilharzia because I do not swim” were conveyed by learners in focus group discussions (Participant 36, 38, 41 /FGD/ 17/10/2012). Due to previous information that one gets bilharzia by swimming learners do not believe that they may have bilharzia, because they do not swim anymore. The lack of sufficient information in the past has generated a need for new communication strategies with

effective messages, which will be able to make people understand that there are ways of getting infected with bilharzia other than swimming.

The Information Desk

The use of young energetic individuals made it easier for the team to communicate and gather responses from the learners regarding bilharzia and the MTC (Participant 40/ interview/ 17/10/2012). Information materials such as the consent form (see appendix five) and the pamphlets (see appendix six) of the project were distributed in masses to the learners. The team had the responsibility to encourage learners to participate in the MTC by using several communication approaches to target the different groups and individuals at each school. To supplement the non-verbal information materials, the information team tried to engage individuals and small groups in informal discussions in order to hear what the learners had to say about bilharzia. Learners “learnt the life cycle of bilharzia and [were] able to understand how the snail is involved when it comes to bilharzia” (Participant 19/ FGD/ 2012).

The main selection of the team is in line with the aspect of peer education which is defined as the use of members of the same group, age and social background that attempts to modify social and individual norms, beliefs or behaviours by providing accurate information (King, 1999). Peer education is viewed as having a positive influence in high schools and has the potential to affect attitude, beliefs and behaviours since learners feel more comfortable to discuss some issues with peers (Shea & Wiener, 2003). The information team utilised peer education to influence the social norms of the individual and to encourage behaviour change. The talks amongst learners not only informed but tried to gain an understanding of the beliefs and attitude that learners had towards the MTC and bilharzia. Such information led to conversations and debates leading to learners thinking about the reasons behind the behaviours and actions.

Trust is considered as an important factor in peer education since peer educators seek to understand the learner’s subjective judgement. The lack of strong trust relationships amongst the learners and information team had caused challenges because they were not part of the school environment and they may be viewed as outsiders (Bandura, 1986). Although in some instances peer relationships were undermined and one may be forced to use communication approaches that may be aggressive or invoke fear in order to get the attention of learners. The long term side effect of bilharzia such as infertility is what learners fear. “If bilharzia is not treated for a long time, you can end up not being able to have children” (Participant 7/

Interview/ 26/09/2012). The fear that was invoked in the learners captured their attention and created self-efficacy leading to learners wanting to know the measures they would take to prevent infection (Witte, 1997). Learners were able to express their fears regarding the disease and find measures to address them.

The information team wore T-shirts to attract the attention of learners at schools. Colourful uniforms are a useful method when one wants to be easily identified in the school environment. This is able to decrease confusion if the uniform shows the name of the project. Cases have been noted whereby uniforms are used to share short and effective messages (Cropley, 2004). Printing messages on t-shirts planted a thought in an individual's mind, and initiated communication with the individual. This could be beneficial to the learners since not all learners had the self-esteem to communicate with outsiders. The t-shirts had increased the attention the information team receives from learners and learners were aware of the visitors at school. "The t-shirt tells me that the bilharzia people are here to help us and give us information" (Participant 16/ FGD/ 10/10/2012). This has led to learners questioning themselves and approaching the information team to find out why the team was at the school, and the team utilised this opportunity to engage in short informative discussions with the learners.

The researcher observed that during the information desk the team was able to talk to cliques as opposed to only learners in the classroom. This environment was less formal, had more freedom and there were closer friendships amongst learners and hence there was a greater level of trust as opposed to the classroom because "I was one of the girls you talked to and I did not have a problem cause I know my friends wont laugh at me" (Participant 32/FGD/ 16/10/2012). Learners in cliques were able to discuss preventative methods that they use at home. Learners were able to voice out that they taught their younger siblings that go swimming in the river about bilharzia and its dangers. They took the knowledge that they received at school and shared it in their communities. These learners try to stimulate behaviour change in their communities by providing and sharing information so that the people they engage in discussions with have the opportunity to make informed health decisions (Cardey, 2006).

The DoH MTC operated in predominately black rural communities and not many of the learners were exposed to visitors from foreign European countries. The observations suggested that visitors did not come across many challenges and in most instances learners

were willing to communicate with them. They may not have understood the native language but learners tried to communicate in English with them “We enjoy having the visitors at school and they are nice to talk to” (Participant 21/FGD/ 10/10/2012). The larger the team, the more people they were able to reach and inform about the MTC and bilharzia. Learners were able to relate to and find it easy to approach members of the information team at the information desk, thus making it easier for them to receive information.

The team had to try and create “hype” in the school and introduced themselves to the learners. Through active participation during the information desk the researcher noted that few learners took the initiative to introduce themselves to the information team and ask questions. This was because learners had made plans such as eating with friends or finishing class work or homework during their break times. In some cases learners simply did not wish to communicate with the bilharzia team. The reasons that prevented learners from taking the initiative were also caused by the lack of visuals and sound from the information desk (Participants 11-13/ FGD/ 27/09/2012). Visuals such as banners and loud sound were able to attract learners from a distance and inform them about what was happening (De Barr *et al*, 2009). They needed to be attractive and colourful in order to attract learners to come and read them. Many teenagers related well to music and followed the trends of music (De Barr *et al*, 2009). The information team could utilise this opportunity by playing music during the information desk. This activity was likely to encourage learners to participate in the activities presented by the information team, such as discussions and reading.

The pamphlet was able to spread information without the information team being present which had been an advantage to the project because “even you are gone we show each other the pamphlet” said a learner (Participants 35/Interview/ 17/10/2012). Although the researcher observed that the lack of team members in the information team had resulted in limited interaction between the team and the learners, and as a result there was no one to answer their questions, leaving learners to make their own assumptions and conclusions. It is imperative that during the information desk that the team is able to reach the majority of learners at the school to try and decrease incorrect information and stigma in the school.

The information desk had been able to encourage learners to make positive decisions towards the MTC. Learners had the opportunity to have a member of the information team to explain what they did not understand and to relate the importance of the MTC and bilharzia. The perceptions discussed during the informal discussion at the school had enriched the ability for

learners to decode messages. Learners had different perceptions, learners with the dominant understanding were able to challenge learners that had oppositional position stating that they were trying to limit the reproduction of incorrect messages (Hall, 1973). “When me and my friends looked at the poster we asked each other questions and we told each other when we felt what she was saying is wrong” (Participant 32/ FGD/ 16/10/2012). The information desk had also contributed to more learners agreeing to participate in the MTC. It has provided learners with an opportunity to submit their consent forms if they had missed the first opportunity, although some learners take the initiative to sign their own forms. This opportunity was important because not all learners received the consent form during the first round of distribution. When learners returned their consent forms they were able to ask questions if they encountered statements they were unable to understand. Thus far the consent form is the most distributed, understandable and detailed information material handed to the learners (Participants 1-4/ FGD/ 2012). It is said to be understand because it contains the most written information.

Section Two: Behaviour Change Communication: The role of social cognitive theories within the SEMCHB and SEM frameworks

Behaviour change communication (BBC) focuses on encouraging change of particular activities and action which may be done by the individual, community or society. It is famous for merging various persuasive and understanding practices and theories. Communication approaches used in implementing behaviour change interventions impact on the manner in which audience receives and understands the information (Ang, 1990). These communication strategies need to stimulate supportive environments for positive behaviour change to occur. This section focuses on the psycho social theories that influence behaviour change communication. It primarily considers the psychosocial theories that are situated within the individual level of the SEMCHB such as the Cognitive Dissonance Theory, Health Belief Model and the Extended Parallel Process Model and that are useful in making sense of the learner perceptions of the MTC communication strategy.

Cognitive Dissonance Theory

The cognitive theory has assist to guide the study to understand how learners understand and initiate new behaviour practices and the information provided to them. Not all learners were willing to be informed about the MTC and bilharzia. Learners in a focus group discussion expressed themselves saying “we walked away because we don’t want to be seen they will laugh at us” (Participant 23-27 / FDG/ 11/10/2012). Their state of being dissonant or listening to the information may have increased their state of dissonance, since learners did not want to be associated with the DoH MTC (Festinger, 1957). Bilharzia may not always be a comfortable topic for learners to discuss, since in some instances it caused learners to experience guilt, shame or peer pressure because of their actions and attitudes towards bilharzia (Cetron *et al*, 1996).

The doubt of whether they should participate or not created tension within themselves since “[s]ometimes I fear the people that will see me drink the tablet and I know that it is good for me to drink the tablet” (Participant 14 / Interview/ 27/09/2012). These tensions were caused by the different cognitions that each individual had and those cognitions were influenced by their parents, friends, teachers or peers which form part of their social network (Festinger & Carlsmith, 1959). The learner’s decision to take treatment could also be influenced by their school environment. The school environment is whereby learners motivate each other to participate by “I try and encourage my friend to take the tablet” (Participant 33-34 / FDG/

10/10/2012). The value systems of an individual related to health may contribute to the manner in which the learner receives the information (Festinger & Carlsmith, 1959). Statements such as “I had bilharzia when I was young and I know the pain I felt so that’s why I took the tablet” (Participant 37-41 / FDG/ 17/10/2012). This statement further explains the point that learners who were previously aware of bilharzia or had been previously infected with bilharzia were more likely to accept the information and participate in discussion regardless of how other students treated them. Dissonance can be stronger in learners when their self-image, emotions or reputation is affected (Stone & Copper, 2001). If learners feel that talking about bilharzia in front of people that they are not comfortable with demeans them, they will refrain from participating in the discussion unless the learner has a motivational drive to reduce dissonance and spread positive information (Stone & Copper, 2001). During the MTC, the reason for some learners not participating was “they will laugh at me if I get sick” and such statements had resulted in learners choosing not to receive the treatment (Participant 1-3 / FDG/ 26/09/2012).

The uniqueness of each school required the MTC team to have different strategies to approach the learners, teachers and in some cases the school governing body. The researcher observed that learners in each school behaved and accepted the information in a different manner and not all selected school were receptive of the MTC, and the manner in which the school received the MTC contributed to the effectiveness of the MTC. At the majority of the schools the DoH MTC has been well accepted by the teachers and the headmaster. The operation of the MTC was much faster and more effective if teachers assisted in the project, hence the attitude, behaviour and emotional reactions of school staff were considered to be important in the MTC (WHO 2011). Schools that supported or had only low dissonance towards the MTC which were willing to assist the MTC team often resulted in teachers encouraging learners to participate in the MTC. This may result in a change in the thoughts and attitude which may lead to improved participation and behaviour change of the learners (Lieberman, 2007). Teachers were able to assist the team to provide public health education to learners. Learners felt a sense of assurance when their teacher asked questions or emphasised the information spoken by the bilharzia team. A learner once said “It’s not that I don’t trust you but it makes more sense when my teacher told us again” (Participant 35 / Interview/ 17/10/2012). Public health education was provided through classroom talks where the teachers were in class and they encouraged learners to listen actively to what was being said. Some teachers reemphasized the messages provided by the information team using the

approach they use when teaching learners. This has shown that they have an interest in learners receiving the information but also in their understanding the information about bilharzia.

Teachers have a closer relationship with their learners than the MTC information team and learners value the information they receive from their teachers. Hence teachers re-emphasising effective messages about bilharzia helps learners to trust, have lower dissonance levels and accept the information (Lieberman, 2007). It has not been all community members who have been willingly accepting towards the MTC. Community members, school staff and learners who do not have the full information need more information that they can relate to and understand. The provision of extra information has led to people understanding the importance of taking treatment. This according to learners is a challenge that the information team needs to overcome (Participant 22-27 / FDG/ 11/10/2012). The information provided to learners, teachers and community members should encourage learners to participate in the MTC.

Health Belief Model

The Health Belief Model (HBM) is used to predict health behaviours and reasons for the health behaviours and is highly recommended in public health communication and education campaigns (Clarke *et al*, 2000). The application of the model has provided insights for the reasons behind some of the learner's actions and decisions towards the MTC and these insights are shared below. The model is able to explore the perceived benefit, perceived susceptibility, perceived severity and the perceived barriers. An understanding of these factors can be of benefit to biomedical interventions (Clarke *et al*, 2000). A biomedical intervention needs to be informed about what the community understands and believes about the intervention (Clarke *et al*, 2000). The opinions and suggestions made by the community need to be considered and carefully included in the planning and implementation processes of the project if they are appropriate (Clarke *et al*, 2000).

Insights of learners

Learners need to be aware of the perceived susceptibility of being infected with bilharzia and participating in the MTC. The methods of getting infected with bilharzia may seem unbelievable since learners say “I can’t get bilharzia by just walking in the water” (Participants 23-27 / FDG/ 11/10/2012), but in order to facilitate self-efficacy in learners, learners need to see the perceived threat of the disease (Clarke *et al*, 2000). Possible ways of getting infected such as swimming in rivers may seem absurd for some learners in high schools. The researcher observed during a classroom talk in a primary school that six to 12 year olds were aware that they may have the disease. However, high school learners often did perceive themselves as susceptible to being infected due to the perception that “bilharzia is for children” (Participants 16-20 / FDG/ 10/10/2012), and as a result failed to see the threat of the disease and importance of the MTC. Despite the information provided to the learners, they may fall short on seeing the possible severity of the disease, since it is taken as a light children’s disease (Participant 30-41 / FGD / 17/10/2012).

Statements made by learners such as “we have showers and I am too old to swim in a river” (Participant 35 / interview / 16/10/2012), (although many of them have not tested for bilharzia) indicated that they believed they did not have bilharzia, but some did admit to water activities such as doing laundry at the river. They feel that their susceptibility to being infected with the disease was low hence their motivation to participate in the MTC was low (Nieto-Montengro *et al*, 2008). Denial often arises because people are afraid of the perceived threat and they do not believe that it can happen to them. In the context of the MTC some learners felt that they don’t have bilharzia because they are older, hence they feel the perceived threat is not relevant to them and will not affect them in any way (Slavin *et al*, 2007) (Participant 9-13 / FDG/ 27/09/2012). It is important that messages that are sent out are able to relate to the public (Slavin *et al*, 2007).

The materials were designed to increase awareness about bilharzia and had no intention of invoking fear in individuals. However learners admitted that when they feel the messages being communicated are scary by voicing out statements such as “Is it true that if you have bilharzia you can’t have a baby?” they become conscious of the severity of the disease since they become conscious that their health is at risk. The realisation of the disease threats may encourage a change in behaviour so that the individual does not experience the possible harm (Rosenstock *et al*, 1988). Being conscious about the fact that bilharzia can lead to infertility has motivated learners to have self-efficacy and the confidence to participate in the MTC. It

has also shown learners the perceived benefit of receiving the treatment “ Knowing that if I take the treatment it will stop bilharzia from making not to have babies is good for me” (Participant 10 / FGD / 27/09/2012).

The provision of information about the side effects of the treatment, and the concerns of learners about getting sick at school have caused barriers to learners participating in the treatment campaign. Learners see a threat to taking the treatment and not all learners were persuaded by the information provided, to take the treatment. Participant 23 felt that they “rather not take the treatment because they will get sick” (Participant 23 / FDG/ 11/10/2012). The information material explains the possibility of experiencing minimal side effects but when learners see other learners suffering from side effects they become discouraged from participating in the MTC, Hence the visuals of learners suffering from the side effects becomes a barrier for learners with low self-efficacy to receive the treatment (Fong *et al*, 2009).

Fear appeals and self-efficacy

The main rationale behind fear based appeals is to send out a message that will alert the viewer to change unhealthy behaviour (Witte, 2002). It is not only visual messages that may be used, but communicating through interpersonal and individual discussions can also generate fear within the individual (Witte, 2002). The project has chosen not to use any harsh graphic pictures to explain what could happen if you do not treat bilharzia. The information materials use cartoons for ease of reading and humour. It is often wondered if today fear appeals are still the most appropriate means of sending out effective messages to the public (Slavin *et al*, 2007). The section below provides insights into the effectiveness and lack of effectiveness of non-intentional fear tactics that have been used by the project.

Learners respond differently to messages, whilst others may be frightened and make statements such as “bilharzia is a scary disease because it affects your womb” or think the message is ridiculous by saying “do people even still get bilharzia”, others respond as if the message is not directed at them which is referred to as othering “I should tell sister about bilharzia so she won’t swim in the river anymore” (Participant 36 / FDG/ 10/10/2012). (Petros *et al*, 2006). Othering of information was more common in learners aged 16 and above who felt that the message of bilharzia was not targeted at them but at young children ranging from 5 to 13 years of age (Petros *et al*, 2006). This response is due to their low perceived susceptibility to bilharzia. Learners felt that we should focus on the younger

children with information and treatment, since they are the most exposed to infested waters, which may be a threat to their health. However, the older learners were aware that they are also exposed to infested waters in their communities through household chores (Participant 21 / Interview/ 10/10/2012).

The decision to treat was often made by the learner if they were above 16 years as stated in the consent form (see appendix 5), but this decision was often influenced by their peers, societal environment or family members (Figueroa *et al*, 2002). Learners often listened to some extent to their friend's advice in making the decision whereby they said "I will drink the tablet if my friend drinks it too" (Participants 8-11 / FDG/ 27/09/2012). The opportunity for learners to utilise the biomedical intervention was freely available but learners felt that access to utilising the biomedical intervention was limited. The worry of what their peers would think of them and the perceived risk of taking the treatment made learners fear to utilise the biomedical interventions (Ruiter *et al*, 2001). It is partially the role of the project to communicate the perceived risks of participating in the project, to reduce this fear, since learners wished to fully understand what it meant to participate in the project (Rogers, 1985).

Learners acknowledged the need to be told about side effects and were often able to handle the information, "I am happy that you tell us about the side effects because if you don't and I get sick I will never drink it again and I also won't trust you" although the approach used to inform also contributes to the decision on whether to take treatment or not (Participant 30/ FDG/ 16/10/2012). Often the information scared them, and the fear of the side effects did not encourage learners to take the treatment, but if the fear invoked is balanced with self-efficacy concerning the information provided to learners, there may be a possibility of learners considering adopting positive behaviours (Rogers, 1985). If high levels of fear were aroused learners panicked and automatically chose not to participate in the MTC. It is symptoms such as infertility that have contributed majorly to learners taking treatment. Infertility amongst the males was taken more seriously and was feared since they believed that it can cause problems in their marriages in the future. The thought of not having children motivates them to participate in the MTC (Participant 30 / FGD / 17/10/2012).

The Value of Information within the Social Networks

The communication initiatives made by the DoH MTC were unable to reach all the learners for reasons such as “I only saw the information desk because I came late to school on that day” (Participant 42 / Interview/ 17/10/2012) said a learner during a semi structured interview. As a result some learners were fortunate enough to hear the information from the information team, other learners depended on the information they received from secondary sources such as friends, classmates, and family and community members. Secondary sources of information were helpful, but could be harmful if they communicated misinterpreted messages which may create undesired behavioural changes (Hoffman & Gillam, 2004). In high school, secondary information normally came from the teachers or their fellow learners because some learners were not at school on that day (Participant 15 / FDG/ 10/10/2012). The SEMCHB explains that the individual is influenced by groups that are closer to them and that they share a trusting relationship, hence there may be a possibility for the individual to place greater trust in the secondary information they receive as opposed to the information they receive from ‘the outsider’ DoH MTC team (Lang *et al*, 1997). The school environment is the environment they are most exposed to and hence may possibly have the most influence on their choices and behaviours (Meery & Reed, 2000). Within the study population half of the learners confirmed receiving some of their information from peers during school hours. Mostly learners utilised the opportunity to talk about bilharzia after the information team has left (Participant 5 / FGD / 26/09/2012).

Behaviour change communication advises that the communities’ views about the information they receive should be accommodated in the planning process of the project (Walker, 1996). The manner in which learners discussed how they felt about the MTC can be based on the perceptions and feelings that the family members have regarding the MTC. Family members contribute in forming the perceptions a learner has regarding MTC. A learner expressed herself saying that “my mother told me to get the tablet because it is good for me. I took the tablet because I trust her” (Participant 30 / FDG/ 16/10/2012). The SEM explains that the individuals may have the final say in their decisions but their thoughts and ideas are impacted by those whom they trust and value the most, hence individuals from their social networks that are uncomfortable about the MTC may influence how they react towards the MTC (Kincaid *et al*, 2007). The project needed to be conscious of the sensitive issues in the community and be aware of the issues when planning the DoH MTC, in order for the DoH MTC to try and encourage behaviour change.

Family members express their opinions and concerns at home, and listeners are able to adopt some of the same feelings felt by the family members (Clark & Fletcher, 2003). The information that circulated at home can be transported to the school environment and influence the perception of other learners (Clark & Fletcher, 2003). Perceptions that resulted from parents' opinions had impacted learner's decisions to participating or not participate in the MTC. Most learners respect and value the opinions made by their parents and were therefore willing to take the advice they received from their parents, but other learners chose to go against their parents' wishes (Ebbling *et al*, 2002). In focus group discussions some of the learners' comments were "I took the treatment because my mother really wanted me to take, but I just did it for her", "When I told my mother about the treatment that they were going to give us at school she said that I must not because I am not sick, but I took it anyway" (Participant 41/ FGD / 17/10/2012). These comments indicated that learners' value and respect the opinions made by their parents, but they had the final decision as to how they could improve their health status. Some parents may not encourage their children to participate in the MTC and this had been a challenge. It was often due to lack of information that parents disagreed about their children receiving treatment. Observations made by the researcher at the DoH MTC offices were that this gap in information was being bridged through the nurses phoning parents to further explain the reasons as to why it was important and relevant for them to give consent for their children. Often the outcome of phoning parents had led to parents' views about the MTC being positively changed which had resulted in more learners participating in the MTC.

Peers were able to influence each other's decisions (Perry *et al*, 2000). What other learners at school would think about you was important to learners aged between 15 and 25 at school (Participants 8-9 / FDG/ 17/09/2012) and the males 'especially the ones who consider themselves popular' tended to be extra conscious of their image. Popularity is important amongst this age group because it determines how you will be received and respected at school (Walker, 1996). Learners were sensitive about the manner in which they were treated at school. Talking about bilharzia has been known to reduce your status at school, although learners with high self-esteems were able to defend themselves, and continued to communicate about bilharzia and not care what other learners will say (Participant 27/FDG/11/10/2012). The learners made statements such as "I don't get why you care so much about what they think about you", "If you want to remain sick because you are afraid of other learners that were fine but I would rather not be sick" (Participant 2 / Interview /

10/10/2012), but learners that were bullied or had a low self-esteem were commonly afraid to be seen with the 'bilharzia people'. The learners "Do not like to be seen talking to the bilharzia people or taking the tablet because they will laugh" (Participant 24 / FGD / 11/10/2012). These learners often did not participate in the MTC. Learners that were bullied in school often feared being laughed at when they were willing to participate in reading the pamphlet or asking questions pertaining bilharzia, whilst learners that considered themselves popular did not want to participate because it will make them less popular. These issues were considered to be very important within the school environment since they could determine the happiness of a learner at school.

Parent Communication

Literacy levels in rural communities amongst the adults are often poor (Chatters *et al*, 1998). Inadequate literacy can be a barrier to transferring information. Some learners explained that they read the consent form for their parents (Participant 15 / FGD / 10/10/2012). Therefore, learners needed to have a full understanding of what they read and would explain to their parents as the consent form needed to be seen and signed by the parent. Other community projects address parents through verbal communication in their native language (Perry *et al*, 2000). Addressing parents in their native language makes them more comfortable and they can then respond or ask questions related to the project. Some of the learners were not certain if their parents attend parents' meetings, hence their parents may not have enough information about the MTC, which leaves room for them to hear from secondary sources.

Within the health system new information is continuously introduced to improve the quality of life (Clark & Fletcher, 2003). Failure to fully explain the disadvantages and advantages of new medication often causes misunderstandings, resulting in community members finding challenges in accepting new information which is meant to improve their health status (Aspegren & Lanberg- Madsen, 2005). Hence it has been important for the project to explain the disadvantages of the treatment. Introducing information that encourages people to change their current behaviour or reinforce positive behaviour often raises discussions that influence their thinking.

A background study within the DoH MTC suggested that some traditional healers and sangomas may confuse bilharzia with sexually transmitted diseases and believe that methods such as drinking salt water or aloe leaves can cure bilharzia (Lothe, 2012). Introducing new information to learners that come from backgrounds that believe in traditional medicine

challenges the thinking of these learners because they felt “I know my mother won’t approve because she does like it when I take tablets” (Participant 37 / FDG/ 17/10/2012). These learners then faced the challenge of taking the consent form to their parents knowing that their parents did not have a positive attitude toward tablets. In cases like these parents can become barriers to the MTC and required information that explained the positive factors of taking the treatment. Information provided to parents should be sensitive and not focus on mentioning the disadvantages of traditional medicine, but rather it should encourage parents to be willing to be informed and be aware of what is happening in modern medicine (Aspegren, & Lanberg- Madsen, 2005). The information materials did not consider that other people use traditional medicine; hence learners became unsure if they could mix the tablets with other traditional medication by asking questions such as “what if I go to a sangoma and then I also take the tablet her at school , will the tablet still work?” (Participant 21/ Interview / 10/10/2012). The information materials also did not explain if the medication could be taken with other treatment and that had caused confusion amongst in other learners.

Impact of social networks

The social network of parents and peers contributed to the decisions at the individual level of the social ecology model; therefore poor communication within the social networks creates a gap in information resulting in peers and family members making their own conclusions about bilharzia (Shapiro, 1998). Parents had the potential to encourage and inform their children about health and disease, and most have established a trusting relationship and hence the learners feel more comfortable when being addressed by someone they trust (Ndiaye, 2003).

Providing information at a community level can assist in decreasing the stigma around the disease (Naar-King *et al*, 2006). High exposure to information and re-emphasising or repeating the message could possibly result in less stigma if the community fully understands bilharzia and how they can prevent and cure the disease. Communities can be reached through distributing the information materials in centralised locations such as DoH clinics and hospitals, community halls or libraries (DoH, 2004). Learners suggested that “providing learners from other schools with information would make it easier for me to explain and talk about bilharzia” (Participant 19 / FGD / 10/10/2012). Communicating about health and disease is most definitely not the norm in South African high schools (Shisana, 2003). Learners prefer to talk about their general day to day experiences as opposed to their health status because they feel that “ it is very personal to talk about your health and some

people will talk about you or even laugh at you” (Participant 25-26/ FDG/ 16/10/2012). Community members who are not exposed to the treatment or the information can unintentionally spread an incorrect message or continue with risky behaviours that place them at risk of getting infected with bilharzia. The availability of information at a community level can empower the community with knowledge that they can use to prevent and protect themselves from bilharzia (Naar-King *et al*, 2006).

Re-infection with bilharzia occurs simply and frequently hence the need for the community as a whole to be addressed (Appleton & Nadioo, 2009). The challenge with the learners is that not everyone understands how simply one can get re-infected with bilharzia, therefore some learners fail to see the importance of treatment. Not communicating the message extensively within the community has resulted in learners thinking that the people outside their school would re-infect them “so even if I take the treatment I can still get re infected because people in the community will continue to urinate and defecate in the river” (Participant 35 / interview / 16/10/2012), were some of the thoughts of learners when they considered trying to change their behaviour practices. Communication can be used as an intervention to create awareness in the community (Aspegren, & Lanberg-Madsen, 2005), that bilharzia can be easily spread if one continues to urinate or defecate in or near rivers.

The SEMCHB considers the physical environment and infrastructure to have an influence on the thoughts, and decisions of the people at various levels of the SEMCHB (Figueroa & Storey, 2011). When water resources are limited in rural communities, people return to ‘their old way of life’ such as collecting river water or doing laundry at the rivers and may be exposed to infested waters (Nyblade & MacQuarrire, 2006). Poor water and sanitation resources contribute to more people being exposed to bilharzia, and the poorer the water and sanitation resources the greater the exposure (Cetron *et al*, 1996). Being aware of this is helpful in understanding bilharzia and the importance of the MTC. Creating an understanding amongst the public about the drivers and determinants of bilharzia includes outlining their perceived vulnerability to bilharzia. As a result more learners could become interested about the precautions they can take to protect themselves and their younger siblings (Participant 24/ FGD/ 11/10/2012). Many learners depended on community taps and water tanks as their primary water source, but this water source often lets them down (Participant 12/ FGD/ 27/09/2012). Learners then had to visit the river to collect water or do chores (sometimes) knowing that they were exposing themselves to the possibility of infection.

Behaviour change was difficult since learners may want to adopt a new behaviour but their physical environment and the infrastructure prohibited them from adopting the desired behaviours. Communicating about how the physical environment and infrastructure contributed to the spread of bilharzia enabled high school learners to appreciate the relevance of the MTC in their lives and to see how the disease could affect them. This could be more influential than communicating about water contact activities such as swimming or playing in the water. Learners were able to relate to and see the possible risk of getting infected when using the physical environment and infrastructure and to explain how the physical environment contributed to the high bilharzia prevalence in the community.

This was a matter beyond the level of the individual since they could not install their own taps, hence learners during the FGD concluded that this information needed to be communicated to their local municipalities, so that they could be aware that the municipalities failure to deliver basic services such as water and toilets exposed the learners to being infected with bilharzia (Participant 6/ FGD/ 26/09/2012). The study did not focus on the societal level (as reflected in the SEMCHB) but was able to appreciate the comments made by the public regarding the societal level. The communication strategy should thus aim to sustain the bilharzia prevention and protection measures through ensuring that positive messages are communicated to stimulate change in the individual but also in interpersonal relationships in the community.

Trust between their social network and the project had assisted learners in believing the information. Peers often communicated the information amongst themselves and it has been discovered that if learners do not trust the project it is less likely that they will take the treatment (Figueroa & Storey, 2011). A relationship where there trust contributes to learners changing their behaviours, and learners often felt safe to take the treatment because it was distributed by nurses and they were able to ask question whilst receiving their treatment. Nurses from the DoH MTC needed to have sufficient information to be able to answer the questions asked by the teachers, students or parents. Their inability to answer would reveal a lack of knowledge about the service they provided and as a result fewer people would be likely to trust them with their health.

Learners Knowledge about Bilharzia and HIV

Public health education may have an opportunity to influence learners at school through subjects such as life orientation (Campbell & MacPhail, 2006). Learners are exposed to information about health and disease in centralised locations such as clinics and community halls (Participant 29 / FDG/ 16/10/2012). HIV and AIDS still remains a sensitive issue in some rural communities and thus talking about the disease is rare in itself (Schmitt & Stuckey, 2004). Not many learners chose to start conversations about HIV and AIDS or any disease that is categorised under the STDs section because they “don’t just speak about health diseases” (Participant 42 / Interview/ 17/10/2012). Although HIV and AIDS is a contentious topic the need to discuss factors that impact and affect HIV is as important as ever (Hotez *et al*, 2006). Slowly teenagers are beginning to comfortably communicate about HIV and AIDS although precautions of who overhears the conversations need to be taken (Shisana, 1995)

South Africa has a history of stigma and discrimination amongst HIV positive people (Petros *et al*, 2006). This was a result of HIV being a taboo topic; hence not many South Africans are comfortable in sharing their status. Learners at school have thought about the methods of HIV transmission and prevention (Hotez *et al*, 2006), but this study has shown that the stigma that surrounds HIV has made it difficult for learners to open discussions in public about HIV. Comments such as “It is people who sleep around a lot that get HIV ” or “It is people who love sex too much that get HIV” were made by female learners during a focus group discussion and such comments (Participant 20/ FDG/ 10/10/2012) had caused learners to be cautious when speaking about HIV in their community and schools. Bilharzia may be mistaken for sexually transmitted diseases, since its symptoms can involve the genital areas, but the majority of learners were aware that the disease is not sexually transmitted. Communicating about sexual and genital issues can be considered to be taboo in some communities and learners are unable to communicate about such topics with their parents and hence they may depend on friends as sources of information (Phetla *et al*, 2008). Trust is often the strongest determinant as to whether the audience will believe what is being said. In friendships where there is a high level of trust amongst both individuals, they are more likely to influence each other (Lang *et al*, 1997). Relationships that have a high level of trust and encourage risky behaviours are more successful in making people adopt the risky behaviours (Brownell & Kelman, 1983). The MTC therefore needed to create a positive relationship with the learners and help friends to encourage each other to participate in the various processes of the MTC.

HIV Positive People Taking Bilharzia Treatment

The South African Life Orientation school curriculum provides health education about HIV and this had led to more learners understanding HIV, resulting in a decrease in stigma, misconceptions and untrue beliefs (DoH, 2004). Through these programmes learners have been able to gain more information which has empowered them to gain more perspective on HIV (Schmitt & Stuckey, 2004), although even with the additional education and awareness HIV remains scary for some young adults (Petros *et al*, 2006).

A few participants viewed being HIV positive as committing yourself to a life time of tablets, which was a lifestyle that they were not willing to adopt (Participant 3/ FDG /26/09/2012). Learners appeared to be aware that treatment for HIV is available. The question “Can a HIV positive person take bilharzia tablets” queried whether bilharzia medication would not interfere with the HIV medication, since learners felt that the HIV medication was more important than the bilharzia medication (Participant 29-34 / FDG/ 16/10/2012). In a focus group discussion a participant stated she would “choose to die rather than to live an HIV positive life” (Participant 15-20/ FDG /10/09/2012). The commitment of taking treatment and living a healthy lifestyle appeared to be a burden to some of the learners. The thought of changing their lifestyles and adopting new positive behaviour made them label HIV as a ‘death sentence’ ‘although in reality HIV/AIDS may be fatal if Anti- retrovirals treatment is not taken’, since they do not think that they want to commit themselves to taking treatment every day (Participant 1 / FDG/ 26/09/2012).

Learners feared that taking treatment for other diseases may cause side effects, or even worse, result in the HIV treatment not being effective. The learners that felt that you cannot take HIV medication and bilharzia medication together would rather only take HIV medication. They expressed themselves by saying “If I had HIV I won’t take anything that will make the HIV tablets not to work, better safe than sorry” (Participant 4 / FDG/ 26/09/2012). The uncertainty of combining different medications led learners to believe that it may be safer not to combine HIV treatment with other medications (Participant 31/ FGD/ 16/10/2012). These findings highlight that biomedical interventions need to provide public health communication that will assist in the elimination of misconceptions and beliefs. The information materials provided do not include information on STDs, hence high school learners sometimes confuse bilharzia symptoms and STD symptoms. The organisation (DoH MTC) had equipped the information team with skills and information that they should transfer to the learners. Although the information may not include the topic of STDs, the information team referred

learners to other service providers and institutes that are qualified and have the appropriate knowledge.

On the other hand some participants had experienced more exposure to HIV information, and thus were more conscious of coping strategies, prevention methods and how to live a positive life whilst being HIV positive by believing “one should eat a lot of vegetable and not drink alcohol” (Participant 25 / FDG/ 11/10/2012). People that had been exposed to positive information about HIV were less likely to view being HIV positive as a ‘death sentence’, they were rather able to except the challenges that may come with being HIV positive (Schmitt & Stuckey, 2004). Participants speculated whether bilharzia treatment could be combined with HIV treatment and further explained that if one can combine tuberculosis (TB) treatment with HIV treatment then surely bilharzia treatment will not cause any problems (Participants 23-27 /FDG/ 11/10/2012). Learners that have utilised the opportunity to ask questions have exposed themselves to accurate information about HIV and bilharzia and then did not associate bilharzia with HIV.

Accepting the Information

Poor communication about bilharzia had resulted in the disease being confused with STDs thus making it embarrassing for learners to freely communicate about the disease. Some of the learners in my study believed that “bilharzia can be sexually transmitted from one person to another, because it is found in the genital areas” (Participant 30/ FGD/ 16/10/2012). Acknowledging that bilharzia can be found in adults is difficult because the symptoms may be confused with STDs (Hotez *et al*, 2006). Female learners become afraid to mention to their parents that they may have bilharzia because their parents may link bilharzia with sexually transmitted diseases they would rather “I will tell my close friend because my mother will think that I’m with a boy” (Participant 41/ FGD/ 17/10/2012). The fear of being accused by their parent of being sexually active has resulted in learners not informing their parents when they have bilharzia, since they will not be the ‘good girl’ in the family. Within a focus group discussion it was expressed that being sexually active may possibly cause their parents to have a different view of them and the trust relationship between the learner and the parent can be destroyed (Participant 1/ FGD/ 26/09/2012). Learners were not willing to take the risk to compromise the relationship that they have with their family because they felt that it was best to be the ‘good girl’. The confusion of STDs and bilharzia limits the learning and opportunity for families to communicate about bilharzia. The project did not provide detailed information to distinguish STD symptoms from bilharzia symptoms. The DoH nurses and the

information team thus had a challenge to communicate such information so that learners' enquiries can be addressed and answered.

Conclusion of the study

The overall aim of this study was to explore how learners receive the information used to communicate about the DoH MTC. The communication tools used by the DoH MTC are able to reach the learners at large but were learners able to understand the message accurately and see the perceived benefits of receiving information and treatment. Communication has become a need in biomedical projects which tend to seek the trust and acceptance of community members. The DoH MTC took the initiative to not only communicate with the primary stakeholder, namely the learners, but to take it a step further by including the parents.

Distribution of written information:

The distribution of written information (posters and pamphlets) is limited to the school grounds of the schools selected to participate in the MTC. Expanding the distribution of the written information will lead to more people in the community being informed about the disease (Ronski *et al*, 1994). Poster distribution is viewed to be limited, since learners advised that the DoH MTC should distribute to outside the schools as well. The DoH MTC should utilise other institutions in the community such as libraries, health clinics, community centres and tuck shops surrounding the schools. The MTC was is limited to selected schools in the Ugu District and although the treatment was is limited to these schools, it is suggested that the information should be accessible to all learners, due to the ease of re-infection

Visuals in the materials:

The visuals used in the communication have impacted on people accepting or othering the information (Cropley, 2004). The picture of a primary school, children swimming and tablets using in the pamphlet, have generated negative responses and have not been able to encourage self-efficacy and stimulate positive behaviour change. It was suggested that the DoH MTC refrains from using pictures of people, since some individuals may find them irrelevant to them.

The poster has allowed learners to commence small discussions about bilharzia. Detailed explanations on disease vectors (snail and human) and transmission may be elaborated to enhance the viewers' understanding of the information. The lack of sufficient information resulted to learners making their own conclusions. Learners are able to understand the poster

but lack of detailed information hinders them when trying to explain to the information to their social networks.

The study recommends that the DoH MTC should continue to educate learners extensively on bilharzia and the available free treatment. The DoH MTC should formulate messages to the public that are able to stimulate self-efficacy. The messages communicated with the targeted groups must be able to motivate the individuals to encourage people amongst their social networks to participate in the DoH MTC (Cardey, 2006).

The study revealed that communicating messages that have the potential to invoke fear in learners has resulted in some learners not realising the potential dangers of not receiving treatment. The study recommends that the DoH MTC communicates the perceived benefits of learners receiving the treatment. The communication strategy needs to show the learners how participating in the DoH MTC will benefit their lives. It is advised that the communication strategy focus more on highlighting the positive attributes of the DoH MTC.

The social learning theory suggests that campaigns can use strategies that focus on modelling behaviours of famous people (Bandura, 1971). It is recommended that the campaign utilises celebrities to send out effective communication strategies that will encourage the public to follow the behavioural activities that are advertised by the celebrities. Such as strategy if well implemented will have the potential to create awareness of the disease (Bandura 1971).

HIV and AIDS still remain stigmatised disease in our society, the study discovered a confusion on whether one can take bilharzia treatment when they are HIV positive (Schmitt & Stuckey, 2004). Communicating about bilharzia and HIV at the same time may potential increase the stigma associated with bilharzia. The study recommends that these two diseases not be communicated together, since both disease affect genital areas and talking about such topics need proper planning of communication approaches to avoid the spread of direct and indirect messages.

Although such recommendation are made, in overall learners are able to understand that the DoH MTC campaign focuses on providing bilharzia information and that one should take the treatment even if they think they don't have bilharzia. Awareness of bilharzia and the actions one needs to take to prevent infection are well received, but application and the motivation of these practises still need to be encouraged amongst the learners and the community.

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Appendices

Appendix 1: Map of South Africa

Source: <http://www.places.co.za/html/visualfind.html>



Appendix 2: Map of KwaZulu- Natal Province

Source: <http://www.mtunzini.co.za/welcome.html>



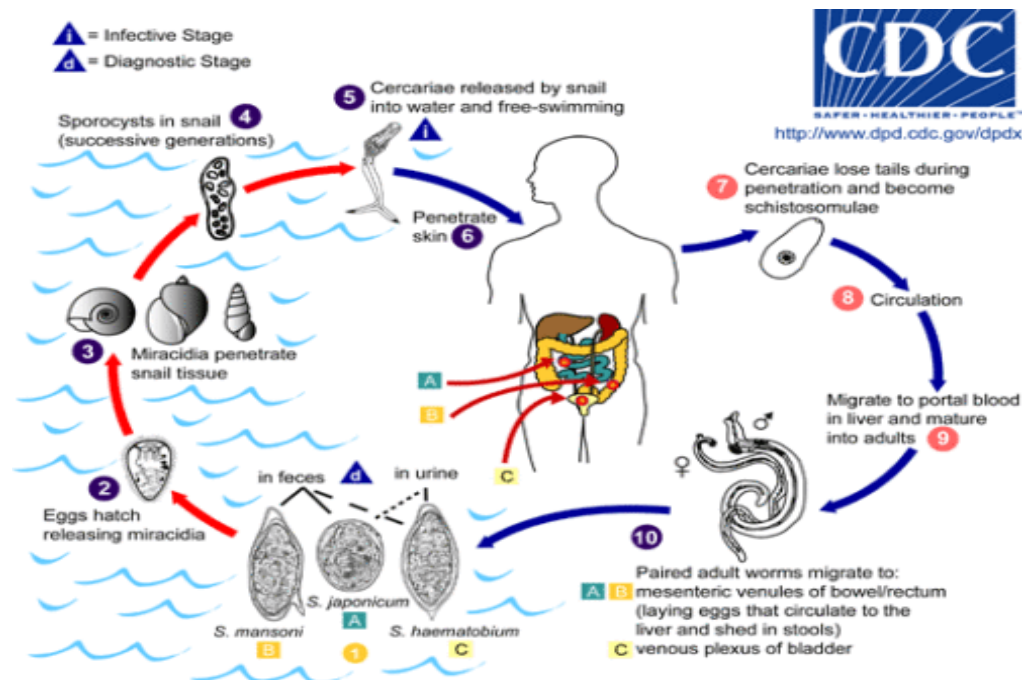
Appendix 3: Map of Ugu district, KwaZulu- Natal, South Africa

Source: <http://www.5starstay.co.za/southcoast.htm>



Appendix 4: The Life Cycle of Bilharzia.

Source: <http://www.cdc.gov/parasites/schistosomiasis/prevent.html>



UKZN Bilharzia Project

We will come to your school

Bilharzia affects people for a lifetime

People may have Bilharzia without knowing it. Bilharzia may make them feel tired, unable to concentrate, makes them loose blood, make them susceptible to other diseases and in adults it can create problems in becoming a parent.

We will assess if Bilharzia is a problem in your child's area. As recommended by the World Health Organization, Ugu Department of Health and University of KwaZulu-Natal, if we find Bilharzia we will ensure treatment. Participation is voluntary.

Side effects

The tablets for Bilharzia may have side effects, especially when taken on an empty stomach. Side effects are usually mild. Some will feel sick for a couple of days. Some may get a rash, diarrhoea, or vomit. People with many worms feel worse as the worms die.

Benefits

Treatment is free. The worms will die and the participant will feel healthier. The treatment has been used since the 1980ies. There are no major problems with it, except for the high price.

Contact details : Professor M Taylor (031 260 4499), Dr J Kvalsvig (031 260 4499), The Department of Public Health Medicine at the University of KwaZulu-Natal. Biomedical Research Ethics Administration (031 260 4769); fax: (031 260 4609); e-mail: BREC@ukzn.ac.za. Please feel free to ask if you want more information or have any problems with this.

Collection of information

We will register names and contact details for a possible follow-up. Some learners, but not all, will be invited to submission of samples for Bilharzia (urine and stool) both before and after treatment. This is voluntary and aims to explore if they get better.

Who approved

The treatment plan has been reviewed and approved by the KwaZulu-Natal Department of Health and the ethical committees of both South Africa and Norway universities.

Economy

The treatment is financed by international grants. There are no plans for collaborations with industry, nor plans for commercialisation.

Consent to participate in the research project

Treatment is based on voluntary, informed consent. You are free to ask for any additional information. Signing this letter confirms that the receiver of treatment and the parent/guardian have received information, have had the opportunity to ask for additional information, and want treatment.

Learner full name _____ Grade _____ Section _____

☐

Yes, I will allow treatment for Bilharzia

☐

No, I will not allow treatment

Guardians' full names _____

Phone numbers _____ If we need to post you a letter, where do we deliver?

Signature _____ Date _____

(Signed and dated by guardian)

I WOULD LIKE THE FOLLOWING OTHER MINORS IN MY CARE TO RECEIVE TREATMENT:

Learner's full name (capital letters)	School	Grade	Section

The Bilharzia Quiz

What is Bilharzia in IsiZulu? _____

Name one way in which you can get Bilharzia?

Name a symptom of Bilharzia? _____

Tick the correct answer:

Bilharzia treatment offered by the Department of Health at your school is **free**?

True ☐ False ☐

Bilharzia treatment is recommended for **everyone** in your school?

True ☐ False ☐

You are **not** forced to take Bilharzia treatment?

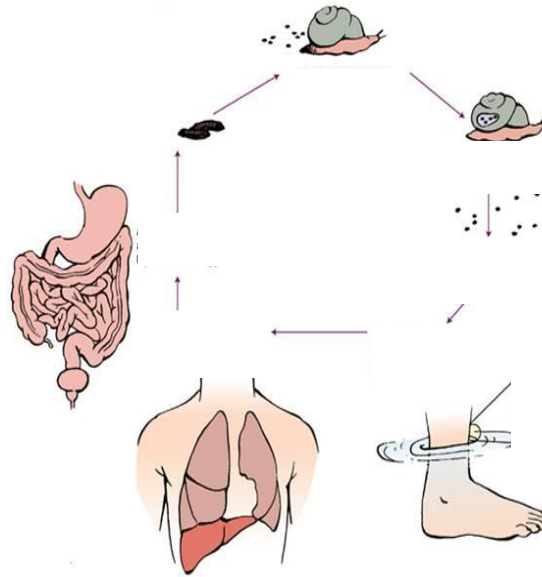
True ☐ False ☐

I want to get treatment for Bilharzia because

My name, phone number, school, and address:

Give to treatment team in Ugu to participate in the lucky draw for a Blackberry

Figure1: THE BILHARZIA LIFE CYCLE



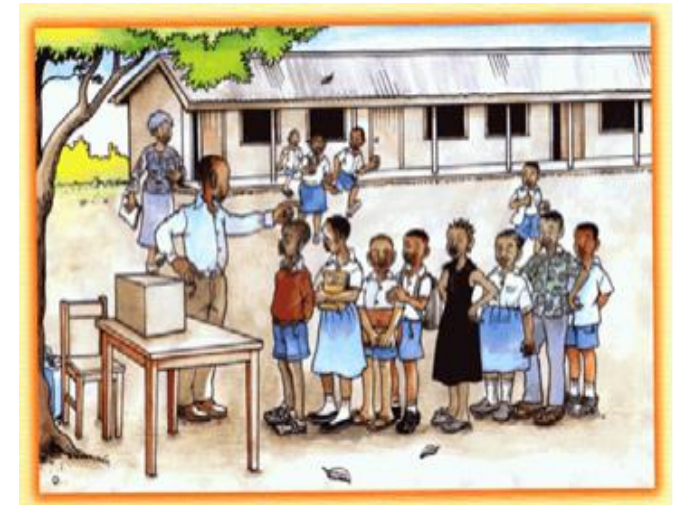
The Bilharzia life cycle explained:

- Bilharzia is a disease caused by worms. These worms spend part of their life in people and part in specific freshwater snails.
- The worms live in the blood around the bladder and intestine. These worms produce eggs.
- The eggs come out of the person's body when they urinate / defecate in / near the water, these eggs hatch into small worms.
- The small worm looks for freshwater snails and move into them. They grow and come out of the snails and into the water. They look for people, go into the people's blood and grow. To prevent transmission don't urinate/defecate near or in open water.

School Treatment for Bilharzia

Treatment will come to your school

Ukwelashwa Kwesichenene
Kuzofika Esikoleni Sakho



For more information contact -
Sister on duty: 079 1767 336

How will we know if we have Bilharzia?



Tiredness and lack of focus. Bladder problems if not treated.

Blood in the urine. It is painful to urinate. No symptoms.



How can I get infected with bilharzia?



Crossing a river



Collecting water



Swimming



Washing clothes

Information Pamphlet MTC12 NDDZ DOX.9

Important facts about bilharzia:

Bilharzia is a very common infectious disease that can easily damage your body without you even knowing that it is there

It is very important to get treated to prevent and treat the disease

The treatment is tablets only; they are harmless and taken once a year.

The Department of Health advises everyone to take treatment, even if you are unsure if you have Bilharzia. It can live in a human body for up to 30 years

Your parents/ guardians must sign consent for you (You can sign for yourself if you are 16 years or older)

We will visit soon, so if you are serious about your health look out for us- we bring you more info and try to answer your questions ☺

Side effects

Bilharzia can be dangerous if not treated

The side effects of tablets are usually mild and not serious

As the worms die, you might be sick for approximately a day, with rash, diarrhoea and stomach pains or vomiting

PLEASE CONTACT US FOR MORE INFORMATION:

Sister on Duty: 079 176 7336

Prof. Myra Taylor:

031 260 4499/ 031 266 1592

Email: Taylor@ukzn.ac.za

Biomedical Research Ethics Committee
(e.mail: BREC@ukzn.ac.za) (Tel: 031 260 4769)

We hope to maintain a good and friendly relationship with you.

Please contact us if you encounter any problems.

Feedback or suggestions will be highly appreciated!

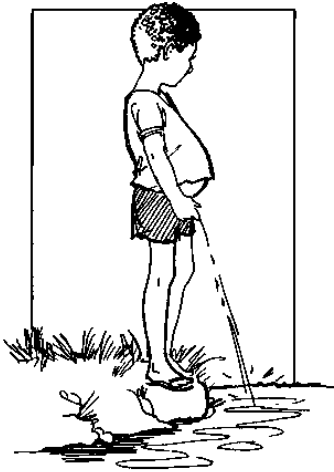
Hand in answers of the Quiz at the Bilharzia Mass Treatment Campaign at school!!

Gratitude to the following partners:



Umjikelezo wesi Chenene

1. Umuntu onesichenene uchama emanzini.



2. Umchamo unamaqanda ezikelemu



3. Amaqanda adinga ukungena emnenkeni othile Ukuze akhule.

4. Izikelemu ezincane kakhulu ziyaphuma emnenkeni ziyo ngena kumuntu, zingena ngesikhumba.

5. Ngaleyondlela umuntu owashayo noma obhukudayo, noma odlala kulawomanzi, naye angahle athola isichenene.

6. Wonke umuntu nalaba abazizwa bephilile bangaba naso isichenene. Kungekudala ukwelashwa kuzofika ezikoleni zenu, namalunga emindeni yenu angeza athole ukuzokwelashwa.

