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A situation analysis of health education for young children to promote prevention and control of malaria in the Ha-Makuyu Village

by

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DECLARATION

I declare that the dissertation/thesis, which I hereby submit for the degree Magister Educationis at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution."

7 April 2017

ETHICAL CLEARANCE CERTIFICATE

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RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	**CLEARANCE NUMBER:** EC 15/06/02
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- Informed consent/assent,
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- Registered title, and
- Data storage requirements.

ETHICS STATEMENT

The author, whose name appears on the title page of this thesis, has obtained, for the research described in this work, the applicable research ethics approval. The author declares that he/she has observed the ethical standards required in terms of the University of Pretoria's *Code of ethics for researchers and the Policy guidelines for responsible research.*

DEDICATION

I dedicate this research to my children, Justine, Coran and Skye, to serve as an example that you are never too old to learn, and that you can do everything that you put your mind to, through Christ who strengthens you. May you, as I, remain life-long learners, and know that education is the key to unlocking dreams beyond your imagination. I love you endlessly and unconditionally.

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ABSTRACT

Malaria is a deadly disease transmitted by the female *Anopheles* mosquito in many tropical and subtropical regions. This disease kills more 500 000 people annually, yet these deaths can be prevented if malaria is diagnosed timeously and treated effectively. Despite many initiatives to fight this disease, the incidence of malaria remains high in the Mutale Municipality in the Limpopo Province where the majority of malaria cases have been diagnosed over the past decade.

This study aimed to explore the current status of health education for the prevention and control of malaria in primary schools in the Ha-Makuya Village, Vhembe District in the Mutale Municipality. The possible existence of educational strategies in place to promote malaria awareness in schools was investigated. It was assumed that strategies such as collaboration between the Departments of Health and Education on health education, and policy provision on the topic could lead to children learning about malaria prevention and control, and in turn, inform their parents, leading to the broader community practicing preventive measures, leading to the reduction and eventual elimination of malaria in endemic areas.

A qualitative research approach was employed in this study, informed by the interprevist paradigm, using a case study. Data was collected through interviews with relevant stakeholders in this matter, such as principals, teachers, nurses and a district official, in order to gain an understanding of their views on and perception of this disease, and to gauge their knowledge on practices to promote malaria awareness through health education. Existing policies were also analysed to examine possible content on this matter.

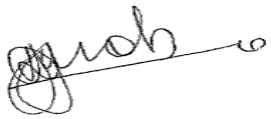
It was found that even though some of the stakeholders' knowledge on malaria-related issues was lacking, their attitude towards prevention strategies was positive. It was further found that, even though some effort was being made to work together, collaboration between the stakeholders was at best tenuous. Policy was also found to be lacking on provisions for the successful implementation of health education programmes for the prevention and control of malaria in schools. Recommendations to address these issues were made to the Departments of Health and Education, principals, teachers, policy-makers, as well as for further study.

KEY TERMS

Malaria, health education, malaria awareness, prevention, control, collaboration, situation analysis

LANGUAGE EDITOR

I, DEZLIN JACOBS hereby certify that I have editorially revised the language of the dissertation “A situation analysis of health education for young children to promote the prevention and control of malaria in the Ha-Makuya Village” and found the level of language outstanding. I have suggested minor editorial corrections.



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LIST OF ABBREVIATIONS

ACT	Artemisinin-based combination therapy
ALMA	The African Leaders Malaria Alliance
CAPS	Curriculum and Policy Statement
DoBE	Department of Basic Education
FP	Foundation Phase
FRT	Faculty Research Theme
GFATM	The Global Fund to Fight Aids, Tuberculosis and Malaria
GMAP	The Global Malaria Action Plan
IRS	Indoor residual spraying
ITN	Insecticide treated bed nets
LSDI	The Lubumbo Spatial Development Initiative
MDG	Millenium Development Goals
NDoH	National Department of Health
NGO	Non-governmental organisation
RBM	Roll Back Malaria Partnership
RNCS	Revised National Curriculum Statement
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
UP ISMC	University of Pretoria Institute for sustainable Malaria Control
WHO	World Health Organisation

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CHAPTER 1

INTRODUCTION AND ORIENTATION

1.1 INTRODUCTION

When one thinks about a mosquito, the image comes to mind of a miniscule blood-sucking insect that can be squashed with very little effort. Yet, the bite of certain species of mosquitoes can have serious consequences, and in some instances lead to death. To name but a few of the disastrous incidents caused by this tiny insect, the endemic outbreak of the Zika virus in Brazil shortly before the 2016 Brazil Olympic Games were scheduled to begin; as well as the deaths of just under 50 people in Limpopo due to malaria over the period of a few days in March 2017 due to flooding experienced in the area.

One bite from the female *Anopheles* mosquito could lead to a person experiencing symptoms such as headache, fever, chills, sweats, fatigue, nausea and vomiting, and in rare and serious cases symptoms such as impaired brain and spinal cord function, seizures and unconsciousness (Barnes, Chanda & Barnabas, 2009). A doctor will diagnose these symptoms as malaria. Malaria is a vector-borne disease transmitted by a biting insect, also known as a vector (e.g. a mosquito). Annual deaths due to this disease are reported to be between 2.7 million deaths annually in 2009 (Barnes et al., 2009), to just under 500 000 deaths reported in the 2016 World Malaria Report (WHO, 2016). The Oxford dictionary (Cutts, 2007) defines malaria as “an intermittent and remittent fever caused by a protozoan parasite which invades the red blood cells and is transmitted by mosquitoes (more specifically the female *Anopheles* mosquito) in many tropical and subtropical regions”. Malaria can be prevented by avoiding mosquito bites mainly through vector control and insecticide treated bed nets (ITNs). Early diagnosis and effective treatment will reduce the incidence of the disease and prevent death. However, if left untreated, the consequences of malaria can be catastrophic (Barnes et al., 2009).

In a case study on the malaria burden in Africa it was found that, of the 274 million cases of clinical malaria worldwide, 86% of the cases were in Africa and that the majority of victims were children younger than five years of age (Barnes et al., 2009). Blumberg and Frean (2007) reiterate this by reporting that Africa has the highest rates of malaria incidence and mortality, with 85% of cases and 90% of deaths globally.

Gerritsen, Kruger, Loeff and Grobusch (2008) assert that in South Africa, malaria is considered to be endemic in places such as the low altitude areas of the northern and eastern parts, where a border is shared with Mozambique and Zimbabwe. Over the last decade, annual reports from Limpopo Province indicated that the largest percentage of malaria cases had been diagnosed in this specific area in South Africa. The Mutale Local Municipality in the Vhembe District was reported to have the highest incidence rate, where the majority of malaria cases have been diagnosed. This rural district is situated north-east of the Vhembe District (Khosa, Kuonza, Kruger & Maimela, 2013).

A recent study on malaria reported that not much is known about the effect malaria has on schoolchildren, but the available evidence confirms that malaria is responsible for up to 50% of all deaths in schoolchildren (Brooker, Clarke, Snow & Bundy, 2013). In light of the above, it is clear to see why malaria is considered to be a severe threat to public health (Govere, Durrheim, Grange, Mabuza & Booman, 2000).

This study aimed to explore the current status of health education for the prevention and control of malaria in primary schools in the Ha-Makuya Village in the Vhembe District, Limpopo Province. It further investigated how this threat to public health is addressed by the relevant authorities (such as schools and government departments – more specifically the Departments of Health and Education) through malaria education and possible collaboration between stakeholders. In the context of this study, the term malaria education referred to the giving and receiving of systematic instruction on malaria, such as its causes and symptoms in order to promote awareness and to control and prevent further infection.

1.2 RATIONALE

Having been granted an opportunity to conduct research with the University of Pretoria Institute for Sustainable Malaria Control (UP ISMC), in collaboration with the Department of Early Childhood Education at the University, the context of malaria, and more specific malaria education in the rural village of Ha-Makuya situated in the Mutale Municipality, was investigated. As previously mentioned, most of the reported cases of malaria have been diagnosed in the Mutale Local Municipality (Khosa et al., 2013) which is situated in the Vhembe District. Thus, this study provided an exciting opportunity to advance our knowledge of how health education on sustainable prevention and control of malaria is addressed in this rural community.

The UP ISMC was launched in an attempt to combat and mitigate the impact of malaria and was also identified as one of the University of Pretoria's Faculty Research Themes (FRTs). The aim of the institute is the promotion of collaborative research within the UP on safer and sustainable malaria control and management. (UP CSMC, 2014). The research activities of the UP ISMC are aligned with the National Department of Health's (NDoH's) goal to eliminate malaria in South Africa by the year 2018. Issues such as community involvement, health and education are addressed as part of health promotion and a commitment exists to changing community behaviour towards malaria. This endeavour acknowledges that the knowledge, attitudes and practices of the rural communities affected by malaria should be taken into account in the attempt to address this disease (UP CSMC, 2014).

The World Health Organisation (WHO) views the elimination of malaria in a serious light and for this purpose a number of initiatives had been launched. One of the initiatives is the Millennium Development Goals (MDGs) which are key goals set to address poverty, disease and human development. Goal 6 endeavours to "halt by 2015 and begin to reverse the incidence of malaria and other diseases" (WHO, 2013b:11). According to the 2013 Country Report on the MDGs (Lehohla, 2013), South Africa has achieved the WHO's goal, by making solid progress in the control of malaria between 2000 and 2012.

The three endemic provinces (Limpopo, KwaZulu-Natal and Mpumalanga) had also shown a dramatic decline in the overall recorded incidence, as well as a noteworthy reduction in the malaria mortality rate (Lehohla, 2013).

A significant decrease in notified malaria cases in South Africa was also reported in the South African Medical Journal (Blumberg, 2015). This decrease was documented over a period of 14 years, with more than 60 000 diagnosed cases in the 1999/2000 season reduced to less than 13 000 in 2013/2014. When this evaluation was done, the status showed that, even though there had been increases in the 2014/2015 season in local and imported cases, with Mozambique contributing the largest numbers of imported cases in South Africa, this decline in malaria cases remained significant (Blumberg, 2015).

However – this success needs to be sustained. At this point, the question arises: What is being done to ensure the sustainability of the achieved success in the prevention, control and elimination of malaria incidences and deaths in rural areas? As the malaria incidence is still too high in the rural village of Ha-Makuya in the Vhembe District, this is cause for concern, and measures to decrease, as well as prevent and control malaria infection in rural areas, was therefore investigated.

For any interventions to really be effective, it is important to understand the views, opinions and awareness of those most affected by malaria. I agree with the statement by Govere et al. (2000) that "… failure to consider community attitudes and beliefs regarding malaria has contributed to the inability of programmes to achieve sustainable control" (Govere et al., 2000:611). It is important that those who intend to implement programmes and policies to reduce malaria incidence and mortality understand and recognise the perceptions of the people mostly affected by malaria – it is only then that there can be meaningful interventions to combat the disease (Brooks & Abney, 2013).

The majority of studies conducted on malaria control and elimination addressed the health, economic and social aspects of malaria. A shortcoming that I found in the current knowledge base is a lack of research on what was being done regarding education on malaria for sustainable prevention and control in rural South Africa, where the prevalence of malaria is still high.

I believe that this study added to the knowledge base and literature on this topic, as it explored sustainable prevention and control measures from an educational point of view, looking specifically at the promotion of malaria control and prevention strategies through health education in schools. The study was also conducted in an area where malaria incidences are still prevalent, despite initiatives and interventions by stakeholders. Kitsao and Waudo (2002) believe that children have just as much responsibility as adults in health matters, and that they can contribute towards making their communities a better place to live in. However, health education can only achieve maximum results when supported by enabling and reinforcing factors (Kitsao & Waudo, 2002). This study looked at health education as an enabling factor.

The use of the cross-sectoral approach (involving a partnership between the Departments of Education and Health) to control malaria is intriguing as the term “health education” seems to echo in various research articles. For the purpose of this study, health education was interpreted to mean that a practical learning experience takes place to promote malaria awareness (see section 1.4). By looking at this approach, this study aimed to analyse the current situation in the Ha-Makuya Village to look at what steps were being taken to promote awareness and to ensure the sustained prevention and control of malaria, through health education.

Several global and local initiatives had been launched to address the prevention, control and eventual elimination of malaria. However, recent reports indicate that malaria incidence in the Limpopo Province is still too high, especially in the Mutale Local Municipality. The challenges experienced in this rural village could be attributed to the fact that it shares a border with Zimbabwe and Mozambique, increasing the possibility of imported malaria.

The incidence in this area remains high, despite the concerted efforts by the previously mentioned initiatives, and this is cause for concern. Approaches to decrease the incidence of malaria, and to improve the knowledge and awareness on this disease for the sustained prevention and control in this rural area were investigated. It was envisaged that this study would advance our knowledge of how awareness of malaria control and prevention strategies through health education can be achieved.

1.3 PROBLEM STATEMENT

The control of vector-borne diseases is not an easy task. Mathers, Ezzati and Lopez (2007) confirm this in their study on the global burden of diseases. In fact, they state that malaria is one of the biggest public health challenges globally in the twenty first century (Mathers et al., 2007). However, if malaria is diagnosed timeously and treated effectively, illness and deaths can be reduced (Mathers et al., 2007).

The question can therefore be posed as to how malaria can be reduced in rural villages where access to proper healthcare is often difficult or non-existent? According to Khosa et al. (2013) a high number of malaria infections is still being recorded in the Ha-Makuya village (Khosa et al., 2013). It would seem that the measures taken to combat malaria in this rural village are not sufficient. It was therefore necessary to investigate what was being done to address this matter. Questions arose about what schools, clinics and the community were doing to combat malaria, as well as what policy, especially the Curriculum and Assessment Policy Statement (CAPS) was dictating, and whether there was any kind of co-operation amongst the relevant stakeholders to prevent further infection of children. The relevant government departments, such as the Department of Education and the Department of Health considered as key stakeholders in this matter were questioned about their involvement in this matter.

The WHO, under the Roll Back Malaria initiative, which is the global framework to implement and provide coordinated action against malaria, also recognises the need for communities to participate in this action (WHO, 2008b). Sustainable participation can be possible only once a community is made aware of and is educated on the vector potential of mosquitoes, hence the community should become involved in health education in vector control programmes. In this regard Deepthi, Kumar, Kamath and Rajeshwari (2013) consider schools as the most appropriate institution to reach the community.

Bearing the foregoing information in mind, the following research questions guided this study:

1.3.1 Research question

1.3.1.1 Primary question

To what extent does Foundation Phase health education contribute to the prevention and control of malaria in the Vhembe District?

1.3.2 Sub-questions

In order to address the main research question, the following questions had to be unravelled first:

1.3.2.1 How do policies of government departments address health education in the Foundation Phase?

1.3.2.2 What strategies do schools and government departments, as key stakeholders, employ to promote the prevention and control of malaria through health education in the Ha-Makuya Village?

1.3.2.3 What are the strengths and weaknesses of health education, specifically on malaria prevention and control in the Vhembe District?

1.3.3 Research aims

As previously stated, malaria is most prevalent in the Limpopo, Mpumalanga and KwaZulu-Natal provinces (Gerritsen et al., 2008), especially in the rural areas, with the Mutale Municipality in the Limpopo Province being identified as a leading area recording the highest incidence of malaria in South Africa (Khosa et al., 2013).

The main aim of this study was to analyse the current situation in the Vhembe District, specifically the Ha-Makuya Village, with regard to Foundation Phase health education to promote the prevention and control of malaria.

In order to address this, the following aims have also been formulated:

1.3.3.1 To establish how health education in the Foundation Phase is addressed in policy.

1.3.3.2 To investigate what strategies have been implemented by schools and government departments as key stakeholders in the Ha-Makuya Village to promote and ensure sustained prevention and control of malaria through health education;

1.3.3.3 To determine the strengths and weaknesses of health education on malaria control and prevention in schools in the Vhembe District

1.4 CONCEPT CLARIFICATION

In order to facilitate easier reading and understanding of this study, the following recurring terms needed clarification in the context of this study.

1.4.1 Malaria

The Oxford dictionary gives the following definition of the term: “An intermittent and remittent fever caused by a protozoan parasite which invades the red blood cells and is transmitted by mosquitoes in many tropical and subtropical regions. The parasite belongs to the genus *Plasmodium* (phylum *Sporozoa*) and is transmitted by female mosquitoes of the genus *Anopheles”* (Cutts, 2007). Malaria is a vector-borne disease transmitted by a biting insect, also known as a vector (mosquito) (Barnes et al., 2009).

1.4.2 Malaria education

For lack of a proper definition, this phrase will be broken down to “education” on “malaria”. The Oxford Dictionary defines *education* as the “process of receiving or giving systematic instruction, especially at a school or university” whereas malaria, already defined above, is a vector borne disease. For the purpose of this study, the phrase *malaria education* thus referred to the giving and receiving of systematic instruction on this vector-borne disease, such as causes and symptoms in order to promote awareness and to control and prevent further infection. This term also linked and related closely to health education.

1.4.3 Health education

According to the WHO website, health education can be defined as “any combination of learning experiences designed to help individuals and communities improve their health by increasing their knowledge or influencing their attitudes.” The Joint Committee on Health Education and Promotion Terminology of 2001 defines health education as “any combination of planned learning experience based on sound theories that provide groups, individuals and communities the opportunity to acquire information and the skills needed to make quality health decisions.” The fact that the learning experience should be planned, is also emphasised in the WHO Glossary, “Health education comprises consciously constructed opportunities for learning to improve health literacy conducive to individual and community health” (WHO, 1998a).

Health education is simply defined as “education that promotes an understanding of how to maintain personal health” in the Oxford Dictionary. In this study health education referred to any learning experience that promotes awareness of malaria and that helps individuals and communities to attain the relevant information and skills needed to make healthy decisions to adopt positive preventative attitudes against malaria infection.

1.4.4 Control

Control is “the reduction of disease incidence, prevalence, morbidity or mortality to a locally accepted level as a result of deliberate efforts, continued intervention measures are required to maintain control” (MalERA Consultative Group on Health Systems and Operational Research, 2011).

According to the Oxford Dictionary *control* means “the power to influence or direct people’s behaviour or the course of events”, or the “restriction of an activity” – which is what will be investigated, namely how malaria can be controlled, in other words, what has been done to influence the behaviour of people in order to reduce malaria incidence in the Ha-Makuyu village. For the purpose of this study, control also referred to the process of empowering people to improve their health by increasing control over their health, which is synonymous with health promotion (WHO, 1998a).

1.4.5 Prevention

Prevention is defined as the action of stopping something from happening or arising, according to the Oxford Dictionary.

The National Department of Health (2009), in its policy document on *Guidelines for the prevention of malaria* describes prevention as "measures taken both against mosquito vectors and against the malaria parasite. These include vector control programmes managed by government health authorities, personal protection measures to avoid mosquito bites and the use of chemoprophylaxis". In the context of this study, prevention referred to all measures and actions taken by schools and government departments (e.g. health, education, and social development) to stop further infection of malaria in the Ha-Makuya village.

1.4.6 Situation analysis

This study is a situation analysis being conducted on a rural village in order to gain knowledge on and to get a holistic view on the status of malaria control in this village. The definition of a situation analysis provided by Garkovich (2009) aptly describes what is meant in terms of this study when he states that a situation analysis comprises the development of a statistical picture of a community, using currently available information to identify and describe trends and to compare the community with others in the region, state or nation.

The United Nations Entity for Gender Equality and the Empowerment of Women (UN, 2014:1) stipulates that a situation analysis is "the key foundation for any sound intervention. It helps to ensure a programme's relevance and to find out the best course of action by learning about community attitudes and practices. In addition to ensuring the appropriateness of the intervention to the local context, carrying out a situation analysis, will help avoid duplication of efforts."

In this study the concept situation analysis referred to the investigation of existing educational strategies that are implemented to promote awareness as well as the prevention and control of malaria in the Ha-Makuya village. The strengths and weaknesses of these strategies as well as its relevance to the local context were also investigated.

1.4.7 Foundation Phase

The Foundation Phase is the first phase/stage of formal education in the South African education system. Children in this phase range between ages six to nine. The Revised National Curriculum Statement (RNCS) defines Foundation Phase (FP) as the first phase (three years) of the General Education and Training Brand. This phase concentrates on primary skills, knowledge and values, laying the foundation for further learning. The FP comprises Literacy, Numeracy and Life Skills (Education, 2002). FP also promotes the emotional, social, physical and intellectual development of the young child (Mahlo, 2013).

1.4.8 Intersectoral collaboration

The WHO Health Promoting Glossary defines intersectoral collaboration as a "recognised relationship between part of parts of different sectors of society which has been formed to take action on an issue to achieve health outcomes or intermediate health outcomes in a way which is more effective, efficient or sustainable than might be achieved by the health sector acting alone" (WHO, 1998a). The term intersectoral and cross-sectoral collaboration is used interchangeably in this study.

1.5 LITERATURE REVIEW

In order to contextualise the study, a comprehensive literature review was conducted to orientate the reader. The following statement by Undonwa, Gyuse and Etokikdem (Udonwa, Gyuse & Etokidem, 2010:1) underpins this study: "Correct knowledge of a health problem, when combined with the right attitude, can lead to healthy behaviour and practice".

This study aimed to explore the educational measures that are in place to ensure sustained malaria control in the rural Vhembe District through health education. It is true that a lack of knowledge, or insufficient knowledge on malaria could contribute to increased mortality rates. The main focus was whether schools made any effort to ensure the promotion of sustained malaria prevention and control in order to support the transition from control to elimination in all endemic provinces in South Africa.

1.5.1 From control to elimination

Malaria is a globally recognised threat to public health (Govere et al., 2000). The severity of the threat is illustrated by the launch of several global initiatives in a common goal to reduce the mortality rate, and to eliminate this disease through concerted efforts made by the global partners. These initiatives are discussed in more detail in Chapter 2, and include inter alia:

- The Roll Back Malaria Partnership (RBM)
- The Millennium Development Goals (MDGs)
- The Global Malaria Action Plan (GMAP)
- The African Leaders Malaria Alliance (ALMA)
- A Resolution on Accelerated Malaria Control
- Towards Elimination in the African Region
- The Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM)
- The Lubumbo Spatial Development Initiative (LSDI)

Various reports on these initiatives indicate success in the achievement of their goals to reduce and eventually to eliminate malaria, as is evident in the latest reports on the MDGs, which report that the mortality rates for malaria decreased by more than 25% globally between 2000 and 2010. South Africa has also been successful in moving towards malaria elimination (Lehohla, 2013; WHO & UNICEF, 2013). A study done by Maharaj, Morris, Seocharan, Kruger, Moonasar, Mabuza, Raswiswi and Raman (2012) found that there was a significant decrease in malaria-related mortality and morbidity across the three endemic provinces since 2000. However, Limpopo Province remains the largest contributor to malaria incidence locally, as the recorded reduction in malaria incidence here was the lowest – with the majority of cases being reported specifically in the Mutale Local Municipality (Khosa et al., 2013). This could be attributed malaria cases being imported through the porous border shared with Zimbabwe and Mozambique, and these countries are classified as “highly malaria endemic” (Khosa et al., 2013).

Researchers on this matter are of the opinion that if South Africa is to stay on target for the elimination of malaria, the country should inter alia maintain a “high level of malaria awareness in communities, monitor drug and vector resistance and support malaria control measures in neighbouring countries more effectively” (Blumberg, Frean, Moonasar & Committee, 2014:225).

1.5.2 Knowledge, perceptions and attitudes

In many countries with endemic malaria, the general community does not necessarily know much about the disease. Such limited knowledge leads to inappropriate preventive behaviour (Nonaka, Kobayashi, Jimba, Vilaysouk, Tsukamoto, Kano, Phommasack, Singhasivanon, Waikagul, Tateno & Takeuchi, 2007). This lack of knowledge presents a challenge with regard to the implementation of any kind of intervention (Batega, 2004; Gitonga, Karanja, Kihara, Mwanje, Juma, Snow, Noor & Brooker, 2010).

While several studies concluded that there exists a lack of awareness and knowledge in the community on aspects of malaria such as the cause, prevention and treatment (Govere et al., 2000; Kirkby, Galappaththy, Kurinczuk, Rajapakse & Fernando, 2012; Brooks & Abney, 2013; Yin, Wang, Xia, Zhou, Zhou, Zhang & Feng, 2013), other studies agree that a possible solution to this challenge could be effective health education through schools and specifically by using schoolchildren as messengers to influence and improve the attitudes, knowledge and awareness of the community members (Udonwa et al., 2010; Midzi, Mtapuri-Zinyowera, Mapingure, Paul, Sangweme, Hlerema, Mutsaka, Tongogara, Makware, Chadukura, Brouwer, Mutapi, Kumar & Mduluza, 2011).

1.5.3 Health education and schoolchildren

As mentioned above, the poor knowledge on aspects concerning the cause, prevention and treatment of malaria must be addressed if the prevention and control of malaria is to be sustained, eventually leading to elimination of this disease.

Literature reveals that children are most vulnerable to this disease, as their immune system is not fully developed (Barnes et al., 2009; Bundy, 2011; Ohlin, 2012; Brooker et al., 2013).

Malaria kills nearly a million people annually (WHO, 2016), with the most victims being children no older than five years of age - an equivalent of a child dying of malaria every 30 seconds in Africa (Barnes et al., 2009) and a study done by Brooker et al. (2013) confirms that malaria is responsible for up to 50% of all deaths among schoolchildren. Bundy (2011) reiterates this by stating that “it is school-age children who have the highest prevalence of infection and who pose a threat to the ability to reduce transmission” (Bundy, 2011:94).

In line with the aim of this study, interventions and health education should therefore start with children. Bundy (2011) further points out the benefit of using schools, and including health education to current and existing health programmes in schools as a cost-effective approach to sustainable malaria control and prevention strategies. This view is echoed by numerous authors (Nonaka et al., 2007; Ayi, Nonaka, Adjovu, Hanafusa, Jimba, Bosompem, Mizoue, Takeuchi, Boakye & Kobayashi, 2010; Deepthi et al., 2013) where studies done by these authors agree that health education through schools encourage community-wide understanding of the malaria problem and make recommendations that health education should be integrated into existing health care programmes, as well as the curriculum.

In my view, this would be especially effective in rural areas, where people experience access to health facilities as a major challenge – but even in the most remote areas, children attend schools, which would make schools a natural entry point to disseminate information to the community, starting with educating the children. This view is supported by Ohlin (2012) who conducted a study on the use of children as health change agents in the fight against malaria, and found that schools can teach children about malaria prevention and treatment as well as encourage them to extend the knowledge to their families and the wider community, thus increasing the knowledge of malaria.

However, even though comprehensive research has been conducted on using schools and schoolchildren to convey health messages to the community (Brooker, Guyatt, Omumbo, Shretta, Drake & Ouma, 2000; Okabayashi, Thongthien, Singhasvanon, Waikagul, Looareesuwan, Jimba, Kano, Kojima, Takeuchi, Kobayashi & Tateno, 2006; Brooker, Kolaczinski, Gitonga, Noor & Snow, 2009) there is no current consensus as to the optimal approach.

Few studies exist in which an explicit intervention is addressed (Brooker et al., 2013). Health education is a broad term, and must be looked at in terms of what policy dictates. This will be discussed in broader detail in Chapter 2.

1.6 THEORETICAL FRAMEWORK

This study attempted to investigate the situation in primary schools in the Vhembe District with regard to the promotion of malaria awareness through malaria education and intervention strategies such as support and cross-sectoral collaboration by government departments. The reason why I looked at primary schools is mentioned earlier in this study (par 1.5.3), namely that schools were seen as a natural entry point for the dissemination of information, and also because children (who are the most vulnerable to this disease) could be used to convey messages of health, for example the promotion of malaria awareness to their parents and eventually the broader community (Ohlin, 2012).

The CAPS curriculum for the Foundation Phase focuses on the holistic development of the child. Scrutiny of this document revealed that one of the study areas, *Personal and Social Well-being* includes a focus on relationships with other people and the environment (Education, 2011). Ultimately, the environment in which a child grows up has an influence on his/her development, and vice versa. It is my assumption that if a child grows up in a healthy environment, this will likewise influence the child to strive to create the same environment for others. Thus, based on this principle, if the topic of malaria education, and the prevention and control of this disease is included in the teaching of the young child, he/she will develop into a knowledgeable adult, who knows how to prevent and control malaria, alerting and informing others about this, and eventually contributing to the elimination of this disease. Therefore, in my view, a suitable theory to explain how the influences of one aspect in a child's life has an impact on the next, would be Urie Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1986).

This theory defines five interrelated layers of the child's environment, its interaction and impact on the holistic development of a child. This means that any change in one layer would have a ripple effect throughout the rest of the layers (Paquette & Ryan, 2001).

These layers comprise the microsystem (the layer where the closest relationships exist), the macrosystem (the relationships between the various microsystems), the exosystem (the larger social system such as the neighbourhood) the macrosystem (far removed from the child, but still has an influence on the child) and finally the chronosystem (furthest layer, such as life experiences of the child through development). Thus, by teachers (representing the microsystem) creating an awareness of sustained malaria prevention and control (influence) in the young child, this influence will be spread to his/her home and community (mesosystem and macrosystem) – thereby creating a healthy environment in which to grow up, not only for the child, but for the whole community at large (chronosystem). This theory was considered suitable to illustrate and understand this relationship.

The following is a schematic presentation of this theory for the purpose of this study. A comprehensive discussion of Bronfenbrenner's Ecological Systems Theory follows in Chapter 2.

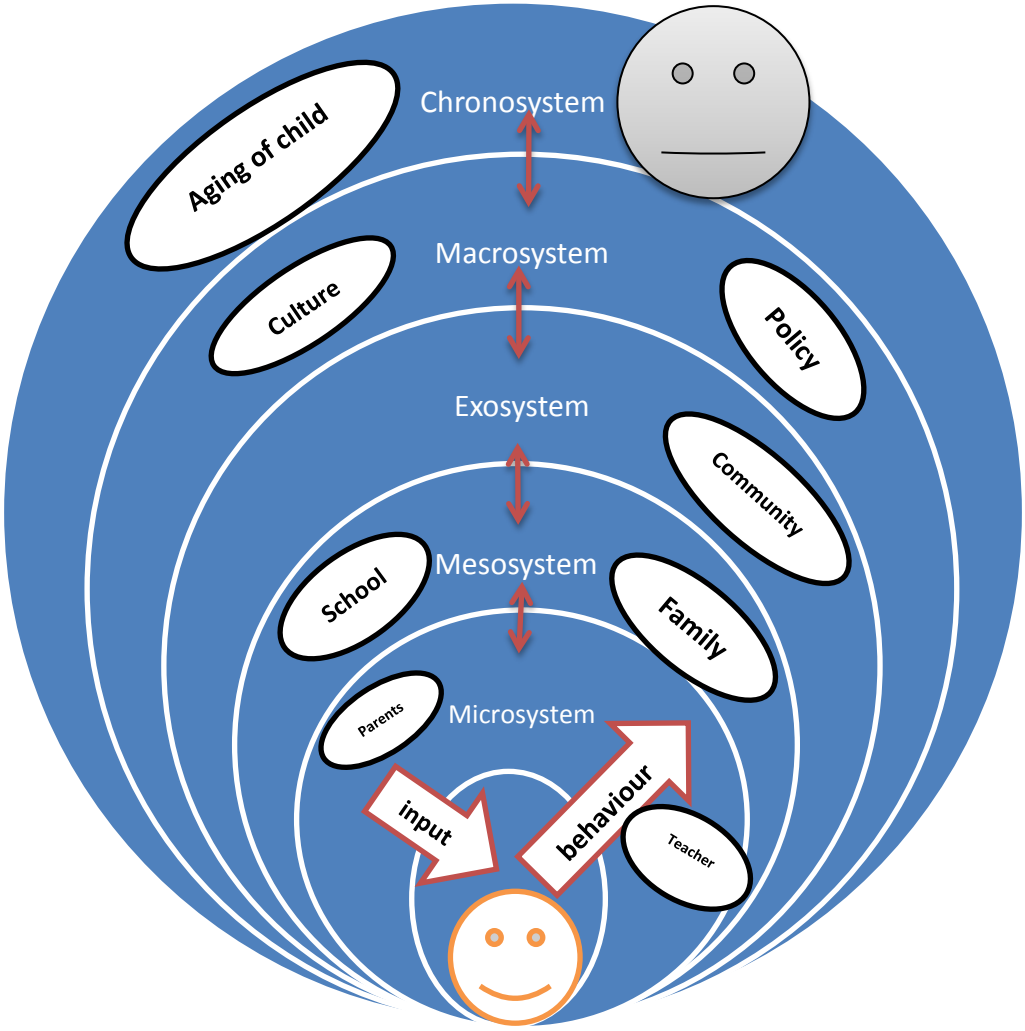

Figure 1.1: An outline of Bronfenbrenner's ecological systems theory (1979) as implemented in this study.

1.7 RESEARCH METHODOLOGY

This study investigated educational strategies for the promotion of the prevention and control of malaria through health education in primary schools as well as possible cross-sectoral collaboration between various role-players and the role of the school in facilitating community involvement with regard to malaria control. The following section will give a brief overview of the methodology that was applied in collecting and analysing the data for this study.

1.7.1 Research design

Kinash (2006) describes the research design in terms of three interactive concepts, namely paradigms, methodologies and methods, where paradigms are our beliefs that influence the research approach; methodologies are the discipline-specific processes and methods are the specific ways employed for data collection (Kinash, 2006). These concepts and their application to this study are briefly outlined below:

1.7.1.1 Research paradigm

The interpretivist paradigm is one of the paradigms that inform qualitative research, and the one that I consider most appropriate for this study, as it focuses on the understanding the meaning of human actions (Vasilachis de Gialdino, 2009). This is emphasised by Creswell (2011) defining the main aim of the interpretivist paradigm as providing insight into how people make sense of their situation (Creswell, 2011). In attempting to investigate the educational strategies in place in the Ha-Makuya Village for the promotion of malaria education through schools, I believed that insight could be gained into their actions concerning malaria prevention and control. The interpretivist view is further founded on the theoretical belief that reality is constructed in a social context (Fossey, Harvey, McDermott & Davidson, 2002) which is linked to the theoretical framework of this study, discussed earlier in this chapter.

1.7.1.2 Research approach

As this study did not set out to investigate measurable factors, I considered a qualitative research approach to be best suited for this study. The aim of qualitative research, as described by Fossey et al. (2002) aligns with the interpretivist paradigm in which this study is situated namely that it aims to answer questions on developing and understanding the meaning of human experiences (Fossey et al., 2002). The role of schools in the promotion of malaria awareness for the benefit of the community is not a measurable factor, but rather an attempt at understanding the interactions between role players, and their experiences.

1.7.1.3 Research type

This study was conducted in the rural Vhembe District where the incidence of malaria is still high despite concerted efforts to prevent and control the disease. The study was mainly conducted at three purposively selected primary schools in the Ha-Makuya Village. For this reason I considered a case study approach to be best suited for this study. As this study also aimed to explore how role-players in the Vhembe District collaborate to prevent and control malaria, the description of a case study by Nieuwenhuis (2010b) aptly states that a case study aims to offer a holistic understanding of the interactions of participants with each other in a specific context.

1.7.2 Research methods

The manner in which the data was collected and analysed is described in the section that follows.

1.7.2.1 The role of the researcher

The role of the researcher is debated by many researchers, each having their own opinion on what the role should entail. However, they agree that the researcher acts as the research instrument in the data collection process (Hoepfl, 1997; Nieuwenhuis, 2010b). Rossman and Rallis (2011) as well as Cohen, Manion and Morrison (2013), advocate that, in the data analysis and interpretation, the voice of the participant, and not the researcher, should be heard). In agreement with the interpretivist view, this implies that the social settings and the relationships with other people constitute one's belief system and perceptions of reality. Furthermore, in order to prevent my innate knowledge and preconceived ideas from influencing the research (Creswell, Ebersohn, Eloff, Ferreira, Ivankova, Jansen, Nieuwenhuis, Pietersen, Clark & Westhuizen, 2010). I had to prepare thoroughly before embarking on data collection. This entailed inter alia that I familiarised myself with the context, i.e. the culturally acceptable ways of conduct and the development of qualitative skills.

1.7.2.2 Research site and participants

This study was conducted in the rural Vhembe District, specifically in the Ha-Makuya Village. The reason for selecting this village is because the incidence of malaria remains high here, despite efforts being made to lessen the incidences of malaria. Three primary schools were selected to participate in the study, with the consultation of a local NGO. Envisioned challenges with regard to language and guidance in the area were pre-empted by enlisting the assistance of a guide and translator.

Creswell et al. (2010) advise that sampling in qualitative research should relate to the research questions, methodology as well as the aim of the study. This study investigated the educational strategies in place for the promotion of malaria awareness in schools. It was thus relevant to employ purposive sampling in selecting the sample. In order to obtain information rich data, the sample comprised school principals, Foundation Phase teachers, district officials from the Departments of Health and Education dealing with policy, as well as nurses from the local clinic. These participants were deemed appropriate as they were in positions to answer the questions posted in this study.

1.7.2.3 Data collection

This study employed two data collection methods, namely semi-structured interviews and document analysis. The use of multiple data collection methods resulted in a better understanding of the situation, as well as ensured triangulation and the trustworthiness and credibility of the data (Fossey et al., 2002).

(i) Interviews

Semi-structured individual interviews, consisting of a set of predetermined open-ended questions to focus and direct the interviews, as well as to learn more about the participants' views and opinions (Seabi, 2012) were conducted with the Principals, Foundation Phase teachers, district officials and nurses.

(ii) Document analysis

Document analysis entailed studying any available documents on malaria prevention such as national and provincial departmental policies (i.e. the CAPS curriculum), reports on malaria case management and any other kind of written texts on malaria prevention and control in the Vhembe District (such as posters, pamphlets, information leaflets). Copies of such documents were requested from the various role players. The analysis of these documents aided my understanding of how the matter of malaria prevention and control is addressed in the research site. Document analysis happened continuously throughout the data collection process. Notes were also made on the information in these documents and how the information was disseminated to the community, as well as the influence of the content of these documents on the community.

1.7.2.4 Data analysis

The collected data was examined and through a manual process placed into meaningful categories (Fossey et al., 2002) also known as open coding in order to find answers to the research questions posed. The data was initially scrutinised to identify common ideas and areas of deviation across the participants (Hoepfl, 1997) and eventually the information was summarised and interpreted in order to make sense of the information. The data were interpreted in relation to the selected theoretical framework.

1.7.3 Trustworthiness

Trustworthiness refers to the way in which data are collected, analysed and coded (Peräkylä, in (Athanasou, Fabio, Elias, Ferreira, Gitchell, Jansen, Malindi, McMahon, Morgan, Mpofu, Nieuwenhuis, Perry, Panulla, Pretorius, Seabi, Sklar, Theron & Watson, 2013). However, Patton, in his description of trustworthiness focuses on the end result, and holds the view that trustworthiness implies that the researcher as well as the user of the findings can trust that the findings reflect that which the researcher set out to investigate (Patton & Cochran, 2002).

In qualitative research the trustworthiness and rigour of a study is assessed in terms of credibility (the value and believability of the findings), confirmability (the accuracy of the data), transferability (whether or not the findings can be transferred/applied to a similar context), and dependability (how stable the data are) (Lincoln & Guba, 1986; Athanasou et al., 2013). In attempting to find answers to my research questions, the above criteria were employed to ensure the rigour and trustworthiness of my study.

As previously stated, this study also made use of multiple data sources (interviews and document analysis). By resourcing information from various sources, the validity of the findings were increased, also known as triangulation (Patton & Cochran, 2002).

Furthermore, to ensure that the data were trustworthy, it was important to verify that the participants' opinions had been accurately interpreted. This was done by handing the participants a draft of the transcript of their interviews, and asking them for comments and/or corrections to the transcripts (Creswell et al., 2010).

Another way in which to ensure the dependability and confirmability was by making use of an audit trail, which manifested through the keeping of comprehensive field notes which included my observation of aspects other than those covered in the interviews and documents, such as visual messages (Fossey et al., 2002; Athanasou et al., 2013).

1.7.4 Ethical considerations

Before I could start with the empirical part of this study, it was crucial to obtain the required permission and ethical clearance to proceed. Ethical clearance and permission to conduct this study was dependent upon permission from local government Departments of Health and Education to conduct research in the schools, and consent from principals and teachers of the selected schools, as well as from the nurses. As Ha-Makuya Village is a rural district, it was also important to obtain permission from the Chief of the village to conduct research in the specific village. Further ethical clearance was required from the Ethics Committees of the Faculties of Education and Health Sciences (as this is a health related study (malaria) and it is required by the UP ethical approvals system to do this).

Ethical principles for research are based on the Belmont Report, drawn up in 1978 by the National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research (National Commission for the Protection of Human Subjects of Biomedical Behavioral Research Bethesda MD, 1978). This report established three ethical principles as guidelines for all research participants namely kindness, respect and justice. These principles are reflected in the planning, preparation and execution of research in the offering of informed consent, determining and voicing potential risks and benefits, and the selection of participants in fair and unbiased ways (Athanasou et al., 2013).

Adherence to these principles is reflected in my study in the following ways:

- Introduction of the researcher (me), contextualising the study in terms of relevance and aim;
- Explaining possible expected risks and benefits that may be linked to the study;
- Assuring participants that their privacy would be respected at any time, and that confidentiality and anonymity would be maintained throughout the data collection and analysis process, and beyond by using pseudonyms, (this was also stated in the letters of consent to be completed by the participants.);
- Participants were informed of the estimated time it would take to conduct the interviews, and this included the time that would be required from them to evaluate the raw transcribed data to verify whether their views were interpreted accurately (which would ensure trustworthiness);
- Finally participants were also assured that their participation in the research project was voluntary, and that refusal to take part would not result in penalty of any kind.

1.8 ORGANISATION OF THIS DISSERTATION

Chapter 1 provided an introduction and background to and a brief overview of the proposed study, as well as set out the research questions that were posed. Important terms that were used in the study were also clarified and the aims and significance of the study were stated.

Chapter 2 presents a detailed discussion on the literature that had been reviewed for this study. This includes literature on malaria and all relevant information that relates to themes identified in this study, from international to national authors and perspectives. The theoretical framework considered to be suitable to this study is also discussed here.

Chapter 3 presents the research design and methodology upon which this study was based. For the purpose of this study, a qualitative research design, informed by the interpretive research paradigm was used.

Chapter 4 presents the results of the collected data. By analysing the data, recurring themes are discussed in relation to its relevance to the theoretical framework.

Chapter 5 summarises the main findings and recommendations that emerged from this study. Answers to the proposed research questions are provided, as well as a summarising conclusion.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

"Correct knowledge of a health problem, when combined with the right attitude, can lead to healthy behaviour and practice" (Udonwa et al., 2010)

This study aimed to investigate what educational strategies were in place to promote malaria awareness for sustained malaria prevention and control through health education in the Vhembe district in Limpopo. The main focus was to determine what schools were doing in particular to ensure sustainable malaria prevention and control – and how schools support the transition from control to elimination in South Africa. Schools are central and accessible to most people, and that is why some studies suggest that schools and schoolchildren are used to convey information to the community (Ohlin, 2012; Deepthi et al., 2013). In the progression from control to elimination, communities are encouraged to get involved, in fact, it has been proven that community involvement is crucial in this process (Govere et al., 2000; Kirkby et al., 2012).

This chapter will therefore evaluate and report on studies conducted to investigate the status of control in countries with regard to the control and elimination of malaria, perceptions of communities on malaria control and elimination, as well as the role of schools in the fight against malaria, and finally, what policies and cross-sectoral collaboration initiatives are in place in South Africa to direct the fight against malaria.

2.2 FROM CONTROL TO ELIMINATION

This section will summarise key global and local studies on the status of malaria prevention, control and elimination, and what it means for South Africa in terms of moving towards the MDG6 goal of elimination of malaria by 2018. I will first evaluate the global status of malaria elimination and then discuss South Africa's position with regard to the elimination of malaria.

2.2.1 Initiatives to combat malaria

In a united effort to eliminate malaria, and to reduce malaria-related deaths worldwide, global partners coordinated their efforts and launched several initiatives. These initiatives are discussed briefly below:

2.2.1.1 The Roll Back Malaria Partnership (RBM)

In an effort to provide a coordinated global response to malaria, the RBM was launched as a priority project in 1998 by a number of key authorities, amongst others the WHO, United Nations International Children's Emergency Fund (UNICEF), United Nations Development Programme (UNDP) and the World Bank. This initiative is served by a Secretariat hosted by the WHO to facilitate policy coordination at a global level. The overarching approach of this initiative is the aim to significantly bring down malaria mortality and morbidity by making use of universal coverage, strengthening national health systems and better access of the poor to effective antimalarial interventions (Sambo, Ki-Zerbo & Kirigia, 2010; WHO, 2013a; rollbackmalaria.org, 2014).

2.2.1.2 The Millennium Development Goals (MDGs)

These goals were adopted in 2001. These are key goals set to address poverty, disease and human development. MDG6 is set to "combat HIV/AIDS, malaria and other diseases, and to halt these diseases by 2015, as well as to begin to reverse the incidence of malaria and other diseases" (Lehohla, 2013; WHO & UNICEF, 2013). The MDGs are used by governments, non-governmental and unilateral agencies as a universal benchmark to observe and monitor individual countries' progress on health performance (WHO, 2014).

2.2.1.3 The Global Malaria Action Plan (GMAP)

GMAP is another initiative, launched by the RBM Partnership in 2008. This action plan provides a global framework for action around which partners can coordinate their efforts to eliminate malaria and improve cost-effective interventions in the goal of achieving the MDGs.

This initiative is inter alia geared at ensuring access to effective malaria treatment by empowering all public health facilities and the training of health workers dealing with malaria in the community (WHO, 2008a; Sambo et al., 2010).

2.2.1.4 Accelerated Malaria Control, Towards Elimination in the African Region

This resolution was adopted in September 2009 by the WHO Regional Committee for Africa. The resolution required that malaria control be integrated in poverty reduction strategies. Its aim is also to address critical challenges such as funding for sustainable malaria control, strengthening of control programmes, and ensuring free access to treatment of malaria cases for pregnant women and children (Sambo et al., 2010).

2.2.1.5 The African Leaders Malaria Alliance (ALMA)

In September 2009 the African Leaders Malaria Alliance (ALMA) was launched by the Past Chairman of the African Union, at the United Nations General Assembly. One of the initial goals of this initiative was to establish a high-level forum where the efficient procurement, distribution and utilisation of malaria control tools could be ensured (Sambo et al., 2010).

2.2.1.6 Global Fund to Fight AIDS, Tuberculosis and Malaria

Other initiatives include the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), established in 2002. It funds the strengthening of health systems, because inadequate health systems are considered to be one of the main impediments to improving interventions to ensure better health outcomes for AIDS, TB and malaria (Weber, 2011).

These initiatives recognise the serious threat that malaria poses to public health (Govere et al., 2000), and endeavour to eliminate the disease in a sustainable manner. These initiatives also indicate the growing impetus in the direction of favouring health system strengthening through including research as a significant element (MalERA Consultative Group on Health Systems and Operational Research, 2011).

2.2.2 Global progress on malaria elimination

According to the latest reports on the MDGs, (and specifically MDG6), which endeavours to "have halted by 2015 and begun to reverse the incidence of malaria and other major diseases" (Lehohla, 2013:80) it is evident that these malaria control initiatives have been effective and successful worldwide, and specifically across the African continent and that a decrease in mortality rates has been recorded in most countries where these initiatives were launched (Maharaj et al., 2012; Moonasar, Nuthulaganti, Kruger, Mabuza, Rasiswi, Benson & Maharaj, 2012; Lehohla, 2013; Moonasar, Morris, Kleinschmidt, Maharaj, Raman, Mayet, Benson, Durrheim & Blumberg, 2013). According to a 2013 report on the global progress on MDG6 it was stated that "… between 2000 and 2010, mortality rates from malaria fell by more than 25% globally" (WHO & UNICEF, 2013:38). Further progress has been made, as is evident in the 2015 report (UNICEF & WHO, 2015) which covers the period between 2000 and 2015. It is reported that, for this period, the global incidence rate of malaria decreased by an estimated 37%, with malaria death rates decreasing by 60%. It is also noteworthy that the death rate linked to malaria fell by an impressive 65% among children under five years of age (UNICEF & WHO, 2015).

2.2.3 Local progress on malaria elimination

In a study conducted on the probability of malaria elimination in South Africa, Maharaj et al. (2012) reported that, after the last major epidemic, during which an estimated 60 000 malaria cases were reported, South Africa implemented an intervention focussing on effective and sustainable parasite and vector control strategies, across all three endemic provinces. The principal vector control strategy was indoor residual spraying (IRS), while the parasite was controlled by timeous diagnosis and successful treatment with artemisinin-based combination therapy (ACT). It was found that these strategies resulted in such a marked reduction in malaria incidence that international and governmental organisations have urged South Africa to adopt and implement an elimination agenda. However, the figures indicating the reduction were not based on scientific data, but on annual incidence data. The implication of this is that, should an untimely elimination agenda be adopted, it would result in failure, in terms of monetary loss, as well as human lives.

This study also emphasised that embarking on a malaria elimination agenda is expensive, as well as time and labour intensive. They concluded that ensuring the appropriate timing of an elimination intervention is of the utmost importance, as well as ensuring that the required resources are in place – as failure would be counterproductive to the success already achieved in terms of malaria elimination (Maharaj et al., 2012).

Closer scrutiny of the three endemic provinces proved that they were at different phases within the malaria elimination continuum (Maharaj et al., 2012) and that the Vhembe District, which is the focus area of this study, remains a high risk area (Moonasar et al., 2013). The malaria incidence rate for this specific district in the Limpopo Province has not changed substantially, and therefore this district remains in the control phase (Maharaj et al., 2012). Several similar studies on the elimination of malaria in South Africa are in agreement on the challenges faced in moving towards elimination (Khosa et al., 2013; Moonasar et al., 2013; Blumberg et al., 2014). South Africa has been successful in controlling malaria in the past decade to such an extent that this country is considered to be in the pre-elimination phase, namely <5 malaria cases per 1000 population at risk (Blumberg et al., 2014). This sentiment is echoed by several other studies that agree that South Africa is well on its way towards malaria elimination (Maharaj et al., 2012; Lehohla, 2013; WHO & UNICEF, 2013).

To understand the progression from control to elimination, The World Health Organisation has developed a malaria elimination continuum:

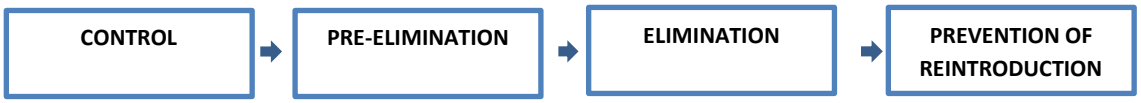

Figure 2.1: The malaria elimination continuum (Moonasar et al., 2012)

When a country is in the process of transitioning into the “pre-elimination” phase of malaria, it is recommended by the WHO that the malaria programme is re-orientated (Khosa et al., 2013).

In an assessment on the progress of South Africa in achieving MDG6, and preparing to enter the elimination phase, several studies concluded that, in addition to its existing control interventions, financing for malaria control should be sustained, active surveillance should be strengthened, and vigorous cross border initiatives, such as the now defunct LSDI, indoor residual spraying (IRS) for vector control, case management and health promotion should continue. Furthermore, a high level of malaria awareness should also be maintained by communities and health workers (Maharaj et al., 2012; Moonasar et al., 2012; Khosa et al., 2013; Moonasar et al., 2013; Blumberg et al., 2014). These are all factors that the reorientation should be characterised by. This is particularly crucial for the Mutale Municipality as a high risk area for imported malaria "through the porous borders with Zimbabwe and Mozambique, countries that remain highly malaria endemic" (Khosa et al., 2013:7).

Maharaj et al. (2012) conclude that it is possible to eliminate malaria in South Africa, as there was a significant decrease in malaria-related deaths across all three endemic provinces since 2000. Limpopo province, however, remains the province where the reduction in malaria incidence is the lowest, and it is therefore the major contributor to malaria incidence in South Africa. The Mutale Local Municipality is located at the north-eastern border of the Vhembe District, along the border with Mozambique and Zimbabwe and has reported the majority of cases (Khosa et al., 2013).

As is evidenced in the literature above, malaria elimination cannot be achieved without challenges. While some studies argue that South Africa is in a position to progress towards elimination (Maharaj et al., 2012; Moonasar et al., 2013) others seem to be cautious, and warn against premature moves towards elimination as all the progress that has been made, could be reversed by ill-timed elimination strategies (Maharaj et al., 2012; WHO, 2013a).

Further challenges to the elimination of malaria in South Africa are depicted by Moonasar et al. (2013) as the important role of the community, and their participation in the elimination of malaria, as well as the need for appropriate policies and other resources to be in place. These aspects will be discussed in the next sections.

2.3 COMMUNITY INVOLVEMENT

This section will discuss literature findings on the knowledge, attitudes and perceptions of communities on the transmission, symptoms, treatment and prevention and control of malaria. Insight into and understanding of the perceptions of communities can be used to design appropriate intervention strategies, especially strategies that engage and involve the affected community.

2.3.1 Community perceptions, knowledge and attitudes

Govere et al. (2000) warn that "failure to consider community attitudes and beliefs regarding malaria has contributed to the inability of programmes to achieve sustainable control" (Govere et al., 2000:611). It is thus important that those who intend to implement programmes and policies to reduce the incidence and mortality of malaria, understand and recognise the perceptions of the people mostly affected by malaria – it is only then that there can be meaningful interventions to combat the disease (Brooks & Abney, 2013).

Studies have also discovered a sense of ignorance among the general community regarding malaria in many endemic countries. This poor knowledge leads to inappropriate and ineffective preventive behaviour (Nonaka et al., 2007). Udonwa et al. (2010) echo this sentiment. They are of the opinion that studies of a community's knowledge, attitudes and practices with regard to malaria have proved to be useful tools in shaping interventions such as policy formulations and programme implementation (Udonwa et al., 2010).

Various global studies conducted on the knowledge and awareness about transmitting vectors, prevention, the cause, treatment and effects of malaria further revealed a paucity of knowledge on these aspects among members of communities affected by malaria (Udonwa et al., 2010; Midzi et al., 2011; Kirkby et al., 2012; Yin et al., 2013). However, there was consensus in the recommendations from these studies, which all emphasised health education as one of the avenues to improve attitudes and knowledge. Similar studies on community involvement and awareness indicate the usefulness of children, and more specifically, schoolchildren, to convey health messages on the improvement of community attitudes, knowledge and awareness regarding preventive behaviour.

These studies found that often, children are the most educated members of a rural community, and as such, would be able to exert the required influence on communities (Udonwa et al., 2010; Midzi et al., 2011).

A study on the perceptions and knowledge of a community in Mpumalanga concluded that the respondents indicated an eagerness to learn more about malaria, as well as a willingness to contribute to the control of malaria in their community (Govere et al., 2000). In an assessment of malaria awareness in the Ha-Makuya District in the Limpopo Province, which is where this study was situated, Brooks and Abney (2013) also found a paucity in the knowledge of malaria in the community relating to transmission and preventive behaviour, which could be assigned to the community's sources of information. These sources include the local clinic, schools and personal experience. Once again, the study concluded that it is important to continue with educating the community, in order to improve their awareness and knowledge of malaria (Brooks & Abney, 2013).

Further studies found not only a lack of knowledge and awareness, but also certain misperceptions about malaria. As stated earlier in this section, effective interventions can only be implemented in a community if there is a sound knowledge of the community's perceptions, and even misperceptions. These misperceptions could prove to be challenging when interventions for effective public health is being designed (Batega, 2004). This sentiment is further echoed in the findings of a study conducted in Uganda on the need to understand community practices and beliefs before interventions can be designed to address malaria prevention and control at the community level (Roehler, Naumann, Mutatina, Nakitto, Mwanje, Brondum, Blanchard, Baldwin & Dellinger, 2013). The importance of a thorough knowledge of the attitudes, knowledge and behaviour of a community in assisting with the reformulation of a control programme strategy and the creation of appropriate health education messages is also emphasised by (Govere et al. (2000).

These studies raise interesting issues around community awareness, and particularly community involvement and health education in the fight against malaria. The question that could be asked is how to improve community awareness and encourage their involvement, especially in rural areas where access to health facilities is often a challenge? This question will be examined in the next section.

2.3.2 Community involvement in improving malaria awareness

Community involvement and awareness go hand in hand (Govere et al., 2000; Kirkby et al., 2012). This section will discuss research on the importance of community involvement and will thus closely relate to the above section on awareness and community attitudes of communities living in malaria endemic areas.

The need for a community participation in order to achieve effective programme implementation is recognised by the WHO through the RBM initiative (WHO, 2008b). Deepthi et al. (2013) conducted an evaluation study on malaria in Africa, and this study suggests that community participation as well as intersectoral collaboration are key elements for the achievement of vector control that is both successful and sustainable. The study further suggests that "sustainable participation is possible only if a community is educated on the vector potential of mosquitoes and also where there is control of mosquitoes through environmentally sound, economically feasible and socially acceptable measures" (Deepthi et al., 2013:2).

The WHO also found that when a community is involved in designing and implementing prevention and control programmes, the success of the activities are thus ensured. On the other hand, it has been proven that when community involvement is neglected during the stages of programme design and implementation, chances of success decrease (WHO, 2008a).

In alignment with MDG6, which aims for zero local transmission of malaria in 2018, and the fact that South Africa is well on its way to elimination, Blumberg et al. (2014), in their study on how to successfully control malaria in South Africa, reiterated that one of the key control elements include "active health promotion in partnership with communities living in the malaria transmission areas" (Blumberg et al., 2014:224).

Joshi and Banjara (2008) studied the malaria-related knowledge, practices and behaviour of people living in endemic areas in Nepal, in order to develop a mechanism for behavioural change. They were of the opinion that it was important to employ health education in order to increase the community involvement to ultimately prevent and control malaria. This study found that health education largely contributed to an increase in the knowledge of malaria prevention and control, and a consequent decrease in malaria cases.

From the consulted literature it is evident that the knowledge, attitudes and perceptions of people regarding malaria prevention and control, and the involvement of the community are closely linked (Govere et al., 2000; Dike, Onwujekwe, Ojukwu, Ikeme, Uzochukwu & Shu, 2006; Udonwa et al., 2010). Together with these aspects, it is interesting to note that the term “health education” is mentioned repeatedly in relation to these aspects. The following section will discuss literature studies on the role of schools in health education, where the term health education, and its linkage to the aspects set out in this section, will be discussed more broadly.

2.4 THE ROLE OF SCHOOLS IN HEALTH EDUCATION

It is generally understood that the fundamental role of schools is to ensure effective teaching and learning. However, schools could also be employed as a valuable and unique community resource to promote health, not only of the learner, but also of the broader community. It is however important to ensure that the purpose and integrity of the normal school programmes remain intact in this process (Tang, Nutbeam, Aldinger, St Leger, Bundy, Hoffman, Yankah, McCall, Buijs, Arnaout, Morales, Robinson, Torranin, Drake, Abolfotouh, Vince Whitman, Meresman, Odete, Joukhadar, Avison, Wright, Huerta, Munodawafa, Nyamwaya & Heckert, 2008).

Many studies have found that schools were a useful point of entry into educating a community (Ghosh, Patil, Tiwari & Dash, 2006; Okabayashi et al., 2006; Nonaka et al., 2007; Ohlin, 2012). The use of children to spread health messages to the broader community was also found to be an effective way of promoting an understanding of how to maintain personal health especially in rural communities (Ohlin, 2012). This section will discuss studies and findings related to the role of schools in promoting malaria awareness through health education, and how schools can be employed to educate not only children, but also influence the community to improve their health by raising awareness on malaria prevention and control.

2.4.1 Using schools for health education

As mentioned in Chapter 1 (see section 1.4) health education is described as learning experiences aimed to aid people in improving their health by scaling up their knowledge, or according to the Oxford Dictionary, it relates to education that aids an understanding of how to maintain personal health (see section 1.4).

As also explained in section 1.4, for the purpose of this study, health education was regarded as any learning experience that promotes awareness of malaria and that helps people to obtain information and skills required to make healthy decisions to eventually adopt positive preventative attitudes against malaria infection.

According to WHO's Health Promotion Glossary "health education comprises consciously constructed opportunities for learning, involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health" (WHO, 1998a). This implies that health education encompass both the distribution of information as well as the fostering of skills required in order to take the steps towards the improvement of health (WHO, 1998a).

Children are particularly vulnerable to malaria because their immune systems are not fully developed, therefore they are at greater risk of getting infected. (Ohlin, 2012) and Bundy (2011:94) echoes this when he states that "it is school-age children who have the highest prevalence of infection and who pose a threat to the ability to reduce transmission". Therefore any kind of interventions and health education should start with them. As the number of children attending school grows, the significance of child health for educational achievement is being recognised by governments (Bundy, Lwin, Osika, McLaughlin & Pannenborg, 2000). Bundy (2011) also points out the benefit of using schools, and adding interventions to existing school health programmes, as an economically viable approach to malaria control.

In rural areas access to health facilities can often be challenging. However, even in the most remote areas, there are schools, and children attend schools – which make schools a natural entry point to disseminate information to communities. Brooker et al. (2009) wrote a paper in which the justification for employing schools and schoolchildren as a "complementary, inexpensive framework for planning, monitoring and evaluating malaria control in Africa" was reviewed. The effect of this approach was also evaluated on improving the knowledge, attitudes, and practices of people in rural communities toward malaria control, and was found to be effective.

These studies also agree that health education through schools can encourage community-wide understanding of the malaria problem and make recommendations that health education should be integrated into existing health care programmes, as well as the curriculum (Nonaka et al., 2007; Ayi et al., 2010; Deepthi et al., 2013).

Studies consistently report that “schoolchildren were not merely recipients of health education, but also contributed to malaria control by playing the role of health change agents in the community” (Nonaka et al., 2007:77). Deepthi et al. (2013) assessed how effective the use of participatory school health education could be on vector-borne diseases among high school children and concluded that this strategy could be an effective vehicle to promote changes in health and behaviour in the community. Children were also found to be more effective and successful in the communication of health messages and the sustainability of the change, as they are the future of every community (Ayi et al., 2010). The role of the school with regard to educating children about malaria control is emphasised in a study conducted by Ohlin (2012), on the possibility of using children as health change agents in the fight against malaria in Tanzania. Ohlin (2012) further argues that schools can teach children about malaria prevention and treatment as well as encourage them to extend the knowledge to their families and the wider community, thus increasing the knowledge of malaria (Ohlin, 2012).

Comprehensive research has been conducted on the use of schools as an effective entry point to convey health messages to schoolchildren and the broader community (Okabayashi et al., 2006; Clarke, Jukes, Njagi, Khasakhala, Cundill, Otido, Crudder, Estambale & Brooker, 2008; Brooker et al., 2009) and all are in agreement about the effectiveness of this strategy. However, it is the view of Brooker et al. (2013) that, even though malaria interventions could be delivered using the schools and schoolchildren, no current consensus could be reached as to the optimal approach. I agree with Brooker et al. (2013), because, although comprehensive studies indicate the success of health education as an intervention for malaria control, few studies exist which adequately address an explicit intervention or approach.

This section concludes with the recommendations of Joshi and Banjara (2008) on their study of malaria-related knowledge, practices and behaviour of people in an endemic area, namely that health education must be considered in order to produce successful outcomes in the control of malaria. Health education remains a very broad term. This raises questions about specific, workable interventions, as well as the efficiency of this intervention. The matter of effective and sustainable interventions will be described and discussed in the next section.

2.4.2 Health promoting schools

This section will provide an account and evaluation of studies on a proven health intervention strategy, namely the model of Health Promoting Schools (HPS). The Health Promoting Schools model is based on the Ottawa Charter on Health Promotion (WHO, 1986). It refers to strategies such as educational and medical strategies aimed at reducing disease and promoting health in schools (WHO, 1986). This will be relevant when investigating what is currently happening in primary schools in rural Limpopo by way of comparing what is being done, and what could be done to improve overall health of a community.

It is believed that good health is directly linked to amongst others, educational achievement. Research has demonstrated that the effective implementation of school health programmes can at the same time reduce common health problems and advance public health and education development (WHO, 1998b). WHO's Global School Health Initiative was launched in 1995, and this initiative aims to mobilise and strengthen health promotion.

Health promoting schools are characterised by the fact that the school constantly strengthens its capacity as a healthy environment for living, working and learning (WHO, 1998b). According to the WHO, health promoting schools have the following defining characteristics:

- It aims to improve the health of students, teachers, parents, and the community;
- It promotes health and learning with all the measures at its disposal;

- It engages officials of both the health and education sectors, as well as teachers and all other stakeholders in efforts to create a healthy school environment;
- It ensures policy implementation and systems that respect an individual's self-esteem (WHO, 1998b).

The above characteristics encompass the research questions of this study, in the sense that this study intended to find answers to questions on amongst others, what schools were doing to promote malaria awareness, not only among learners, but the broader community as well. The study further aimed to establish whether there were any collaborative efforts among stakeholders such as the Departments of Health and Education, and it also analysed what policy stipulates, in terms of the school curriculum, as well as national or provincial policies on the promotion of malaria awareness through health education.

Although numerous studies focus on health promoting schools, the existing body of knowledge is extremely dated, and very few studies have been conducted on health promoting schools in South Africa. The most recent study was conducted in 2009 to examine the differences of health promoting school status in various areas in Lao PDR (Yoshimura, Jimba, Poudel, Chanthavisouk, Iwamoto, Phommasack & Saklokham, 2009). Even though most of the consulted literature is dated, the basic principles of this approach remain relevant for this study, as this study aimed to investigate what was being done by the relevant authorities to address the problem of malaria control and thus improving the health of school-going children and the community. In a study done on the evaluations of health promoting schools, evidence was found that the health promoting school has some influence on various spheres of health for the school community, especially in combatting a number of health issues, including malaria. It was also found that health promotion could successfully be integrated into the school curriculum and policies (Flisher & Mukoma, 2004), but care should be taken not to compromise the integrity of existing programmes.

Nevertheless, available studies reveal that in many schools worldwide, teachers, learners, parents and the community are working on programmes that support and encourage schools and their communities to engage in improved health actions, and to turn their schools into Health Promoting Schools (UNESCO, 1998; Swart & Reddy, 1999). In a UNESCO Newsletter it is reported that “Regional Networks for the Development of Health-Promoting Schools were started in the Western Pacific in1995, Latin America and Southern Africa in 1996. In 1997, meetings were held to develop networks in South East Asia and the northern countries of the Western Pacific” (UNESCO, 1998:3). However, in Kenya and many other African countries, the main aim of existing malaria education in schools is for teachers to teach and learners to retain facts to pass exams (Brooker et al., 2000).

As mentioned earlier in this section, studies and information on health promoting schools are extremely dated. In contemplating a way towards health-promoting schools in South Africa more than 30 years ago, Flisher and Reddy (1995) estimate that by the year 2020, South Africa will have between 14 and 17 million school-going children. They agree that this readily accessible group provides the best opportunity for health promotion that would influence the health of both adults and adolescents. However, they question the efforts being made by South African education authorities to improve the health of school-going children and the community. Already as long ago as 1995, they concluded that “the concept of health-promoting schools poses an urgent challenge that should receive the immediate attention of planners and policy-makers” (Flisher & Reddy, 1995:629). In a later article on establishing networks for health promoting schools in South Africa, Swart and Reddy (1999) reiterate this when they consider this approach an effective avenue to provide a useful framework “because it focuses not on the curriculum but on the school environment, community involvement, policy development, and appropriate health and social services” (Swart & Reddy, 1999:47).

The Shihlobyeni Primary School Health Promoting Project (initiated in 1998) is currently the only known health promoting school in South Africa. The success of this project was discussed at a conference in 2006 (University of Limpopo, 2006).

The project serves as an example for other rural schools in South Africa desiring to develop into health promoting schools. It also follows on the incorporation of the South African National Department of Health's school health services as a component of the Primary Health Care package of services that is to be fully implemented by the year 2006. In the presentation, (University of Limpopo, 2006) the speaker also recognises the fact that the success of a school health programme is subject to good co-ordination between the education and health sectors. With regard to the sustainability of the success and positive behavioural outcomes of school health programmes over time, Tang et al. (2008) caution that a challenge might be experienced when it comes to ensuring consistency in the implementation of the programmes. They suggest the development of improved strategies to sustain the success (Tang et al., 2008). WHO (1998b) furthermore suggest four strategies to create health promoting schools. In summary, these include strengthening the ability to encourage improved school health programmes; establishing networks and coalitions for the advance of health promoting schools; strengthening national capabilities and research to improve school health programmes (WHO, 1998b). These strategies will have to be considered by the Department of Education if an effort is made to add more schools to the list of health promoting schools in South Africa.

In examining all the information on health promoting schools, I have come to the conclusion that whatever programmes had been implemented with regard to general community health, and how they would contribute to malaria control, have not been fully explored. I believe that this study will contribute to the body of knowledge with regard to current literature on this aspect.

The evaluation of literature also revealed a thread of suggested collaboration, or partnerships between key stakeholders such as the Departments of Health and Education, in ensuring the success of any proposed intervention on health education. The next section in this chapter will examine intersectoral collaboration and the stakeholders that impact on the health and education and the promotion of malaria awareness through health education.

2.5 COLLABORATION ON HEALTH EDUCATION

One of the research questions of this study concerns intersectoral collaboration, and whether any collaboration exists between the Departments of Health and Education to promote malaria awareness in schools. This section will report on findings regarding the advisability and success where partnerships exist between the relevant government departments and other stakeholders to ensure that interventions for the promotion of malaria awareness are implemented.

Studies on health education have been consistent in their findings about the establishment of collaboration, or partnerships between relevant sectors to ensure effective and sustainable actions for health education in schools (see section 2.4). In the context of this study, intersectoral collaboration referred to a "relationship between parts of different sectors of society formed to take action on an issue to achieve health outcomes in a more sustainable way than might be achieved by the health sector acting alone" (WHO, 1998a:14). Intersectoral collaboration between the Departments of Health and Education can also be seen as a partnership for health promotion, which would entail a "voluntary agreement between two or more partners to work cooperatively towards a set of shared health outcomes" (WHO, 1998a:17). These partnerships may form a part of intersectoral collaboration for health, or be based on engagements for health promotion and may be restricted by the quest of a clearly defined goal – such as the successful development and introduction of legislation.

According to the WHO's health promoting glossary one of the major goals in intersectoral collaboration is the accomplishment of greater awareness of the consequences of policy decisions on health (WHO, 1998a). This means that, where a partnership exists between two or more relevant sectors of a community, policy decisions could be implemented and monitored successfully. More and more health promotion explores collaboration between the public sector, civil society and the private sector.

In 2007 WHO, the UN and other international organisations convened to identify the factors that might affect schools and also to assist schools to take more effective action to health, education and development opportunities (Tang et al., 2008).

One of the key challenges identified in maintaining progress was improving partnerships among different sections and organisations. It was further stated that successful and sustainable action for health promotion in schools depends on "formal and consensual sharing of responsibilities between health, education and other sections" (Tang et al., 2008:73). Successful progress happens when there is collaboration between national departments of education and health – as well as any other agency that impacts on the health and education of students. This meeting further identified five broad areas of action to achieve health education and development goals, one of which is to harmonise engagement among partners for sustainable partnerships by scaling up the communication of ideas and the benefits of school health programmes across the relevant sectors (Tang et al., 2008).

Evidence from the consulted literature alludes to the fact that partnerships and collaboration between various stakeholders can prove to be mutually beneficial, especially when it comes to the implementation of policy and legislative matters. The following section looks at policy, and more specifically what policies are in place on a national and provincial level on the promotion of malaria awareness.

2.6 POLICY

A policy is the basic principles by which a government or organisation is guided. The Longman Dictionary of Contemporary English defines policy as "a way of doing something that has been officially agreed and chosen by a political party, business or other organisation" (Longman, 2003:1264). Health policy is a "formal statement or procedure within institutions (notable government) which defines priorities and the parameters for action in response to health needs, available resources and other political pressures" (WHO, 1998a:10). It is implemented as a procedure or protocol. This section will scrutinise the available national and/or provincial policies on promoting malaria awareness and health education.

WHO (1998a) is adamant that when decision makers decide on policy development, they should consider the health of individuals and the protection of the environment as an essential part of policy development. Furthermore, the social responsibility for health is echoed by the actions of these decision makers to pursue policies that promote health (WHO, 1998a).

Brooke, Koekemoer, Kruger, Urbach, Misiani and Coetzee (2013) report in their study on malaria vector control in South Africa that, policy development on all malaria-control interventions takes place at national level, but the responsibility for the implementation of policy resides with the Provincial Departments of Health (Brooke et al., 2013). It is also essential to obtain the data on malaria-related knowledge, practices and behaviour of the people residing in endemic areas in order to develop interventions such as behavioural change and for drafting policy to prevent and control malaria in the country (Joshi & Banjara, 2008). The existing policy on malaria prevention and control, as well as the implementation of these policies, will be analysed bearing the above principles of policy development in mind.

2.6.1 Policies on malaria prevention and control

What follows is an overview on the existing policies on malaria prevention and control and health education and how these policies are implemented in South Africa. The current Curriculum Assessment Policy Statement (CAPS), as prescribed for schools by the national Department of Education, will also be discussed in the context of the promotion of malaria awareness.

It is worth noting that, in all the consulted literature on policy, South Africa was found to be lacking in up to date policy guidelines with regard to addressing the malaria problem and possible ways of sustainable malaria control in schools. With regard to malaria control in the community, Brooke et al. (2013) report that KZN, Mpumalanga and Limpopo established vertically structured malaria control programmes at provincial level in 1995. This entails that each province has its own malaria control structure, which is commanded by a provincial malaria control programme manager (Brooke et al., 2013). However, a malaria control structure remains far removed from policy, for which implementation is monitored by government.

However, countries such as Uganda, Swaziland and Nigeria do have national policies with regard to the treatment and elimination of malaria firmly in place (Federal Ministry of Health, 2005; Kunene, Phillips, Gosling, Kandula & Novotny, 2011; Uganda, 2011). Swaziland was the first country in sub-Saharan Africa to adopt a national policy for malaria elimination in March 2011 (Kunene et al., 2011).

These policies address inter alia issues such as the use of antimalarial drugs, information, education and communication for effective preventive measures, monitoring and evaluation of the policies (Federal Ministry of Health, 2005) as well as the treatment of malaria according to the severity of the case, and the training of health workers in appropriate case management (Uganda, 2011).

The “Guidelines for the Prevention of Malaria in South Africa” (National Department of Health, 2009) is not a policy as such, and was developed by the National Department of Health in 2009, in collaboration with various stakeholders as well as malaria experts These guidelines also incorporate the WHO’s guidelines for the prevention of malaria. The guidelines are for use by health care practitioners and it aims to provide them with information on the most suitable interventions for people entering malaria affected areas in South Africa. It also focuses on aspects such as awareness, preventive measures, early diagnosis, and correct and effective treatment. However, these guidelines lack information on aspects such as community involvement or health education (National Department of Health, 2009). As this is not a policy, the evaluation and implementation of the guidelines are not monitored as would have been the case with a policy.

The province of KwaZulu-Natal has developed its own provincial Malaria Control Policy (KwaZulu-Natal, 2000) which aims “to reduce mortality and morbidity due to malaria among the KZN population in areas of high risk, by providing ready access of the population at risk to early diagnosis and prompt treatment at local level” (KwaZulu-Natal, 2000:5). One of the aspects covered by this policy states that community involvement is important to ensure the success of the malaria control programme and that communities should be included in consultations on, and educated in the correct preventive measures and treatment procedures. The policy also emphasises that education should focus on schoolchildren and the training of teachers.

The most recent policy regarding health promotion is the School Health Policy and Implementation Guidelines (National Department of Health, 2011) (last reviewed in 2011) in which brief reference is made to the Health Promoting Schools Initiative mentioned earlier in this literature review (see section 2.4.2).

According to this policy, it is estimated that 18 million learners were registered in public schools in South Africa in 2010. This figure was predicted by Flisher and Reddy in 1995 already, but their estimation was that this number would only be reached in 2020 (Flisher & Reddy, 1995). The fact that current provision of school health programmes in most parts of the country is sub-optimal and that it is faced with several challenges is acknowledged in this policy. The aim of the policy is to provide the necessary framework for reorganising the school health programmes. In its implementation guidelines, it is stated that a robust intersectoral collaboration with different sectors such as the Departments of Health (DoH) and Basic Education (DoBE) is required, as these two departments are the key role-players. An important message with regard to health education that emerges is that "health promotion activities should ideally be incorporated into the school curriculum to ensure on-going input throughout the school years. Attention should also be paid to ensuring a healthy school environment" (National Department of Health, 2011:23) – where school environment refers to not only the learners, but the broader community as well.

For the purpose of this study the CAPS curriculum for Grades R-3 Life Skills (Education, 2011) (specifically Grade 3 Life Skills, and the subject *Personal and Social Well-being*) was examined. According to the policy statement the Life Skills subject is fundamental for the holistic development of learners. It defines holistic development as being the "social, personal, intellectual, emotional and physical development of the learners," as well as the way in which they are integrated. A study area defined within the subject is *Personal and Social Well-being:* and this is considered to be an important study area for young learners as they are still in the process of learning how to care for themselves and how to keep themselves healthy. This study area includes "social health, emotional health, and relationships with other people and our environment, including values and attitudes." The issue of diseases is also addressed in this area. With regard to the stipulations in the School Health Policy and Implementation Guidelines that health promotion activities should ideally be incorporated into the school curriculum, a possible introduction to sustainable malaria control could be included under the topic of "Insects" and "How some insects harm us".

This will further support many views held that interventions should be integrated into existing programmes, and should not compromise the integrity of these programmes – and I consider the curriculum, as a guide to teachers, as an already existing framework.

Overall these policies support the view of intersectoral collaboration, community involvement and the integration of any health education programme into the existing curriculum to ensure successful implementation of malaria control programmes, or school health programmes. This reiterates the views in the above reviewed literature and one can thus infer that community involvement and health education, as well as partnerships between the stakeholders are imperative in the fight against malaria.

The lack of an explicit policy on malaria control through health education in South African schools stands in stark contrast to the commitment of the Kenyan government to the health and well-being of schoolchildren as is evident in its national school health programme, jointly implemented by the education and health sectors. The emphasis on malaria control in schools by both these sectors reflects a focus on cross-sectoral approaches to policy, supported by evidence of successful endeavours in the national context (Kitsao & Waudo, 2002; Gitonga et al., 2010).

From the above section it is evident that, even though there are existing guidelines and policies on malaria in South Africa, there is a need for a clearly defined policy on how to address the promotion of malaria awareness through health education, using schools as entry points to disseminate information to the communities in a combined effort from the Departments of Health and Education. This would support the recommendation as stated in the introduction of this section, a recommendation by WHO that decision-makers should consider the health of individuals when policies are developed, and that they should pursue policies that promote health (WHO, 1998a). The above section gave an account and evaluation or interpretation on the literature that was consulted in the course of this study.

It inter alia investigated the status of malaria control, both globally and locally, it highlighted the importance of engaging with communities in order to assess their knowledge and attitudes towards malaria prevention, and the importance of community involvement in preventive measures, it further examined the role of schools in health education by specifically looking at the health promoting schools initiative launched by WHO, it explored the crucial element of intersectoral collaboration between stakeholders in health education, such as the Departments of Health and Education, and finally it evaluated policies on malaria awareness, both global and local policies were looked at. Overall these policies support the view of health education through schools as well as community involvement and the formation of partnerships to ensure successful implementation of the malaria control programme, or school health programme. This reiterates the views in the above reviewed literature and one can thus conclude that health education, community involvement and intersectoral collaboration are imperative in the fight against malaria. The next section will discuss the theoretical framework of this study.

2.7 THEORETICAL FRAMEWORK

This study aimed to analyse the situation in primary schools in the Vhembe District with regard to health education and the use of schools and schoolchildren to convey health messages to the community in order to ensure improved awareness and knowledge, as well as sustained control of malaria, thus creating a healthy environment. Literature revealed the interrelatedness of the main issues addressed in this study, namely that health education and the consequent promotion of malaria awareness strategies can be constituted by involving all parties affected by this disease, from the child to government and policy-makers.

Ultimately, the environment in which a child grows up and is exposed to in his/her formative years has an influence on his/her development, and vice versa. The child's exposure to positive and negative experiences influences the kind of adult the child eventually becomes, and this in turn will have an influence on the world into which this adult eventually embarks. The Ecological Systems Theory by Bronfenbrenner (1986) defines five interrelated layers of environment, influencing the holistic development of a child. If there is a change or conflict in one of these layers, the effect would "ripple throughout the other layers" (Paquette & Ryan, 2001).

This means that, positively influencing or improving the awareness of the child and the community towards sustained malaria control will have a positive effect on the child's environment, thus creating a healthy environment, and eventually the outcome (or ripple effect) on his/her development would also be positive. Therefore, in my view, the most suitable theory to explain how everything in a child's life and his environment affects how he/she grows and develops, would be Urie Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1986; Paquette & Ryan, 2001).

Darling (2007) evaluated this theory in an interesting article "*Ecological Systems Theory: The person in the middle*". Her interpretation of this theory is only in partial agreement with that of Paquette and Ryan (2001) with regard to the concentric circles representing the five interrelated layers and their interaction with each other. Darling sees the child in the centre of the depictions of this theory as isolated. She also argues that the individual development of a child can never be seen as isolated, and further asserts that even though the environment does have an influence on the child's development, genetics also plays a role in the development of a child, and thus the influence of the child's environment should not be seen as the only influential factor when it comes to development (Darling, 2007).

The following is an explanation of the five interrelated layers as described by Bronfenbrenner as well as examples of how these layers relate and influence each other.

The **Microsystem** is the layer closest to the child. This layer contains the "structures" with which the child has immediate relationships, or direct contact (Paquette & Ryan, 2001). Examples of the structures would be parents, family or the school. These are structures where the child encounters the most social contact. The child will develop better in an encouraging and nurturing environment.

The **Mesosystem** provides the collaboration and interaction between the various microsystems. Good interaction between the microsystems is beneficial to the better development of the child. An example of collaboration between the microsystems can be illustrated as the relationship between the parents and the school and/or teachers.

The **Exosystem** is defined as a larger social system with which the child has no direct interaction, but which still has an effect on his/her development, such as the neighbourhood in which the child grows up. Even though there is no direct interaction, the child will be affected by either the positive or negative dynamism in his/her community or neighbourhood.

The **Macrosystem** is the outermost layer, and the largest and most remote structures that influence the child. An example of this would be the cultural values or religion with which the child is raised. The child does not have the freedom to choose these structures. Yet, they still exert influence over the development of the child.

The **Chronosystem** is the last layer. This system develops due to accumulative experiences and transitions in the individual's life. It "encompasses the dimension of time as it relates to a child's environment" (Paquette & Ryan, 2001). Bronfenbrenner (1986) explains that this system enables one to examine the "influence on the person's development of changes (and continuities) over time in the environments in which the person is living" (Bronfenbrenner, 1986). Examples of changes in a person's environment include the death of a parent, marriage or divorce.

Donald, Lazarus and Lolwana (2010) define theory as a set of assumptions and concepts arranged in a way that tells us about the world, ourselves or an aspect of reality. It was envisioned that the Ecological Systems Theory, the theoretical framework which informed my study, would provide a suitable lens through which the experiences of the subjects in this study could be observed and meaningful conclusions be drawn regarding health education in primary schools in the Vhembe District.

2.7.1 Application of theoretical framework to this study

Bronfenbrenner's theory answers the question how the environment that surrounds the child influences his/her development (Paquette & Ryan, 2001). Bearing this observation in mind, this section will attempt to explain how the theoretical framework applies to this study. This study was concerned with the promotion of malaria awareness through health education.

Using schools and children as tools to educate the community about the control and prevention of malaria implies the involvement and participation of the child in the creation of his/her own environment, therefore involving the child in the exertion of a positive influence in his/her own environment. The interaction at this level would be between the child and his/her immediate relationships, in this case being teachers. The influences in this layer have a two-way effect, both away from the child as well as towards the child. This constitutes only the first layer as defined by Bronfenbrenner, namely the microsystem. It is however in this layer that the interactive influences are the strongest and have the largest impact on the child (Paquette & Ryan, 2001). It is thus very important that positive influences are nurtured in this layer, such as the fostering of successful measures in which to control and prevent malaria. This information is shared by teachers, and in turn, the child shares this information with his/her parents at home, who further share the information with a neighbour or friend, who then shares it with another person and so on, in the end leading to an informed, and thus healthier community in which the child grows up.

The interactions of the four outer layers would also have a similar impact on the development of the child.

2.8 CONCLUSION

This chapter provided an extensive overview of the consulted literature on the themes that are considered to be important for this study. According to MDG6 malaria must be eliminated by 2018. Coordinated efforts by global partners in their common goal eliminate malaria was briefly mentioned. The status of this goal was evaluated, both globally and locally and South Africa was found to be well on its way to meeting the goal of malaria elimination by 2018. Insight into and the understanding of the perceptions of communities in endemic areas were evaluated, as this aspect was considered to be essential in developing appropriate intervention strategies for the prevention and control of malaria.

Community involvement was also discussed as a key factor for successful and sustainable malaria control. The role of schools in health education was examined, where schools were seen as natural entry points to disseminate information to communities.

The literature however could not agree on an optimal approach for using schools in this way. One way of optimising schools for health education was identified in the concept of health promoting schools, an initiative by WHO. However, evidence of only one health promoting school in South Africa was found, namely the Shihlobyeni Primary School Health Promoting Project initiated in 1998. I found that this theme was not fully explored in the literature, and believe that this study will contribute to the body of knowledge with regard to current literature on this theme. The term health education, which is often used in this study, alludes to a combined effort by the Departments of Health and Education. This theme was also explored, and findings of most studies concur that intersectoral collaboration of these two departments could only lead to the successful promotion of malaria education through health education in schools. Finally policy on the promotion of malaria awareness through health education was scrutinised, and I found that even though policy on this matter had been implemented successfully in other countries, South Africa does not have a policy on this matter at all and also that the available policies on malaria are quite dated. The theoretical framework employed in this study is the Ecological Systems Theory by Bronfenbrenner. This theory and its application to this study were also discussed.

Chapter 3 will discuss the research design and methodology employed in this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This study aimed to investigate the situation in the Ha-Makuya Village with regard to the promotion of prevention and control strategies through health education in schools, and specifically what strategies were in place to ensure that people know how to prevent and control malaria. This chapter will describe the research methodology that was followed in the study in order to find answers to the proposed research questions in Chapter 1. The methodology is explained in terms of the research design and research methods, as well as the rationale for choosing each of these components.

3.2 RESEARCH DESIGN

The research design details the overall design, the selected research site and chosen population and sample, the methods by which the data was collected, a discussion on how the data would be analysed, as well as how the trustworthiness of the study would be ensured, and also a discussion on ethical considerations regarding the study (Marshall & Rossman, 1999). The research design further comprised three aspects, namely the research paradigm, the research approach and the research type. These interactive concepts are summarised by Kinash (2006:3) as follows: “Paradigms are the theoretical mindsets, or collections of beliefs that underlie our approach. Methodologies are discipline-specific approaches and processes of our research. Methods are the specific ways in which we go about collecting our research data.”

These aspects will be discussed below.

3.2.1 Research paradigm

Kinash (2006) defines a paradigm as a matrix of beliefs and perceptions. Fossey et al. (2002) elaborate on this definition by stating that a paradigm describes a system of ideas used by researchers to generate knowledge.

They further state that it is a set of assumptions, research strategies and measures for assessing the rigour of a study shared by the researchers.

This study focussed on investigating a specific situation, namely strategies for the prevention and control of malaria in the Ha-Makuya Village, and how those most affected by malaria perceive this disease. Ultimately, the aim was to gain a general perspective of the situation. This aim is aligned with the assumptions on which the interpretivist perspective are based on, according to Creswell et al. (2010), namely to offer a perspective of and to analyse a situation, in order to provide insight into the manner in which a particular group of people make sense of their situation (Creswell et al., 2010:60). The interpretivist paradigm focuses on understanding the meaning of human experiences and actions (Vasilachis de Gialdino, 2009), and therefore this paradigm would be the best suited for this study, as it also foregrounds the meanings that individuals and communities allocate to their experiences (Athanasou et al., 2013). In further alignment with these aims and views regarding the interpretivist paradigm, this study looked at malaria education, assessing the perceptions of teachers and principals, and scrutinised available policies for the prevention and control of malaria specifically in schools, gathering information on this from district officials. Furthermore, this study explored the influence and perception of health workers (nurses) regarding health education in the area. The data gathered in this manner revealed how the participants, as representatives of the community, understood their situation, as well as gave an indication of the meaning that they allocated to their experience of the prevention and control of malaria in this endemic part of the country.

Interpretivist positions are further founded on the theoretical belief that reality is constructed in a social context. Thus, what we believe and know is always managed within social settings, relationships with those around us and cultures (Fossey et al., 2002). Fossey et al. (2002) are also of the opinion that, when one wants to understand human behaviour, some of the crucial elements are the social context, conventions, and standards of a particular person or community. Ha-Makuya is a rural village, where the elders hold very traditional cultural and conservative views on many issues.

These views are ultimately carried over to children in their care. In attempting to introduce any kind of intervention with regard to the prevention and control of malaria through health education, it was therefore important to establish their perceptions and knowledge on this matter first (see section 2.3.1).

The interpretivist paradigm and the above views on the paradigm are linked to the theoretical framework that informed this study, namely Urie Bronfenbrenner's Ecological Systems Theory (as discussed in Chapter 2). This theory describes five interrelated layers of development and the social interaction between and influence of these layers on one another (Bronfenbrenner, 1994). In agreement with the interpretivist view, this implies that the social settings and the relationships with other people constitute one's belief system and perceptions of reality. This link is illustrated in the figure below:

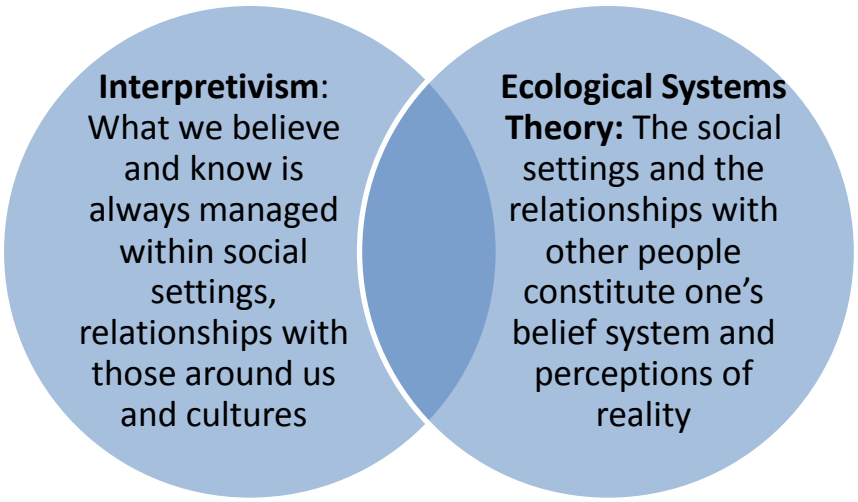

Figure 3.1: The link between Interpretivism and the Ecological Systems Theory

In investigating the strengths and weaknesses of health education, the perceptions and strategies by relevant stakeholders to create malaria awareness on the prevention and control of malaria were examined, with a view to better understand their attitudes (or assumptions) and actions towards the disease.

This could not be done without taking the environment, and the influences of the said environment, into account. In evaluating the above, as well as the distinct congruence between the chosen theoretical framework, the research paradigm and the research approach, it is evident that the interpretivist paradigm was the best suited research paradigm for this study.

3.2.2 Qualitative research approach

This study investigated prevention and control measures of malaria in a specific setting, namely primary schools. For this purpose, the perceived strengths and weaknesses of strategies for malaria education were analysed, as well as cross-sectoral collaboration between various role-players and their attitudes towards fostering malaria awareness. The role of schools in supporting malaria awareness was also examined. This involved exploring people's beliefs and attitudes in order to gain a better understanding of their situation, and their engagement with their social world (Patton & Cochran, 2002). These were not measurable factors therefore a qualitative approach was followed in this study. This approach generates data in the form of words, and not numbers (Patton & Cochran, 2002).

Fossey et al. (2002) define the aim of qualitative research as an approach to address questions "concerned with developing an understanding of the meaning and experience dimensions of humans' lives and social worlds" (Fossey et al., 2002:717). This view is echoed by Creswell (2011) who explains the goal of qualitative research as exploring and understanding a central phenomenon. Therefore, in considering the questions that needed answering in the study, this inquiry would thus best be conducted through adopting a qualitative research approach.

Maxwell (1996) further describes qualitative research as research that develops causal descriptions and evaluates how certain events have an effect on others. The Vhembe District is one of the endemic areas in South Africa where the incidence of malaria remains high, despite efforts to prevent and control the disease. This study asked why this was the case, and what could be done to address this from an educational point of view. It was assumed that, if people were informed of measures that could be taken to change the current situation regarding malaria, it would lead to a further reduction in the incidence.

This echoes the description of Maxwell (1996) of qualitative research above. This view also relates to the ecological systems theory of Urie Bronfenbrenner, the theoretical framework that informed this study (Bronfenbrenner, 1994) (see section 2.7). This theory describes the causative effect of five interrelated layers of human interaction, and how the interaction between these layers affects one another. Thus, if one wanted to analyse a situation on malaria control and prevention strategies, it should not be considered in isolation, but it should be evaluated based on the context or environment in which the role players interact with each other. This relation is illustrated in the figure below:

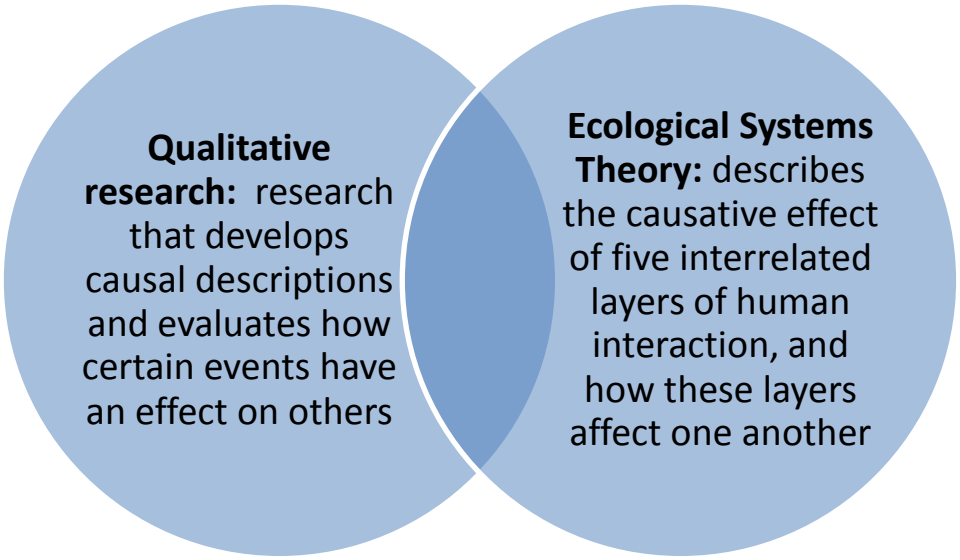

Figure 3.2: The relation between the qualitative research approach and the theoretical framework

In comparing this study with the key characteristics of qualitative research as highlighted by Creswell (2011) the decision to use the qualitative research approach is further justified. According to Creswell the research questions are general and broad, seeking to understand the participants' experience with the phenomenon being studied (Creswell, 2011).

This is evident from the research questions stated in Chapter 1, the main research question being “To what extent does Foundation Phase health education contribute to the prevention and control of malaria in the Vhembe District?”

Patton further lists as a characteristic the small sample size, purposefully selected from individuals who have experienced the central phenomenon to such an extent, that their evidence will be trustworthy (Patton, 2002). Participants are “immersed in the setting of everyday life in which the study is framed” (Creswell et al., 2010:259). The sample size for this study comprised ten participants, made up of principals and teachers at the rural schools, health workers at the local clinic and district officials linked to the Ha-Makuya Village. All these participants were from the Vhembe District, and were not only associated with the high incidence of malaria in the endemic area, but also with the context of malaria education in schools – therefore making their contribution to this study trustworthy.

Creswell (2011) mentions another key characteristic of qualitative designs, namely that it often include case study, will be discussed in the section below.

3.2.3 Research type

The third aspect of the research design is the type of research. This study was conducted specifically in the rural Ha-Makuya Village where the incidence of malaria is still high despite concerted efforts to control and eliminate the disease. Taking into account the initiatives to control and eliminate malaria by 2016 (as discussed in Chapter 2.2.1), this study aimed to understand why the incidence remains high in this specific area, and how this could be addressed by authorities. The specific context in which this study was conducted was to analyse the situation with regard to the health education for children in the Ha-Makuya Village. This involved understanding the attitudes of the people in this village toward malaria education – the central phenomena being investigated.

For these reasons I considered a case study approach to be best suited for this study. Case studies also aim to answer “how” and “why” questions (Creswell et al., 2010). In the context of this study, the “how” pertained to how education strategies work for the promotion of malaria awareness, and the “why” pertained to why malaria incidences remain high in this area.

A defining feature of a case study is that the phenomenon being investigated, has a definable boundary (Willig, 2008). The boundary in this study was the specific area, namely the Ha-Makuya Village.

Case study has multiple definitions and understandings. Willig (2008) argues that a case study research can be defined as an approach to research, and not merely a research method in itself (Willig, 2008). Yin (1994) on the other hand, defines it as a method, “an empirical enquiry that investigates a contemporary phenomenon within its real-life context” (Yin, 1994:23). Furthermore, Creswell et al. (2010) states that case study can be used to describe an element of analysis, or a research method. However, there seems to be consensus in defining a case study as a study with a bounded system, and that the issue being investigated has a definable boundary (Willig, 2008). Another point of agreement is that case studies make use of multiple sources of gathering data (Willig, 2008; Creswell et al., 2010), which is also considered to be a key strength of a case study method (Creswell et al., 2010). For the purpose of this study, however, the best suited definition of case study was that it aimed to gain a better understanding of the dynamics of a specific situation (Creswell et al., 2010). Similarly, Nieuwenhuis (2010b) describes it best by stating that a case study aims to offer a holistic understanding of the interactions of participants with each other in a specific context, and how they assign meaning to the phenomena under investigation (Nieuwenhuis, 2010b).

A further justification for the use of a case study is the view of Nieuwenhuis (2010b) who states that a case study provides a multi-perspective analysis where the researcher considers the perspectives and views of all relevant groups in the situation, and the interaction between them (Nieuwenhuis, 2010b:75). The central focus of this dissertation was a situation analysis of malaria prevention and control measures through health education in primary schools in the Ha-Makuya Village. The views and perceptions on malaria awareness of not only principals and teachers were considered in this study, but also that of health workers at the local clinic, as well as the district authorities on policy in the departments of health and education. Seabi (2012) and Nieuwenhuis (2010b) concur that the use of multiple sources and strategies during the data collection process is a key strength of the case study approach (Nieuwenhuis, 2010b; Seabi, 2012).

I believed this aided in ensuring the quality and trustworthiness of the collected data. The multiple sources used during the data collection process will be discussed at length later in this chapter.

3.3 RESEARCH METHODS

In the above outline on the research design, the relation between the qualitative approach, informed by the interpretivist paradigm and the use of a case study method was illustrated, as well as how these elements link with the chosen theoretical framework for this study. This section will first of all describe the role of the researcher, as well as methods on how the data were collected and analysed.

3.3.1 The role of the researcher

Many writers have varied opinions on what the role of the qualitative researcher is (Fossey et al., 2002; Patton & Cochran, 2002). However, all of them agree that the researcher is the research instrument or tool in the data collection process (Hoepfl, 1997; Nieuwenhuis, 2010b; Yin, 2011).

Consequently, the innate knowledge of the researcher, and his or her understanding of the world around him, will influence the way in which research is conducted. This knowledge and understanding stem from all that the researcher has been exposed to, and the meanings that the researcher has given to these experiences (Creswell et al., 2010). In my opinion, this prepared me to be the instrument through which the data were collected, because one cannot perceive the world as independent from ones knowledge and understanding. This would be to ignore the subjectivity of our own accomplishments (Creswell et al., 2010). Patton (2002) and Golafshani (2003) reiterate this view in stating that qualitative case studies are appropriate to naturalistic, context-specific settings in which the researcher is involved and immersed and becomes an instrument through which the experiences of the participants may be interpreted. However, this very subjectivity is the cause for one of the main critiques levelled against the method, as it fails to generalise the findings beyond the specific case that was studied (Creswell et al., 2010).

Cohen et al. (2013) caution against this subjectivity. Together with Rossman and Rallis (2011) they believe that to understand human experience requires a qualitative approach, as such experiences cannot be measured and predicted; rather, such experiences require description, analysis and interpretation in which the voice of the participants, rather than that of the researcher should come to the fore (Rossman & Rallis, 2011; Cohen et al., 2013).

In order to make the most of being an effective research instrument, Theron and Malindi (2012) mention ways in which the researcher can maximise his/her effectiveness in this capacity. It is their view that the researcher should interact positively and friendly; dress in a culturally accepted manner; keep complete field notes or a research journal and safeguard his/her data by making regular backups.

As this study was conducted at a remote and rural research site, namely the Ha-Makuya Village, it was also important that I had to be well prepared, especially for the duration of the data collection phase. It was therefore important that the necessary steps to conduct fieldwork had to be taken. According to Theron and Malindi (2012) fieldwork calls for meticulous preparation. Thus, my role was to inter alia gain access to the community by enlisting the help of a supportive and strategically based gatekeeper for introduction to and liaison with the community and to communicate the aim and methodology of the study in a culturally accepted and appropriate manner. I also had to familiarise myself with the context (the physical and cultural environment) within which the study will take place. During an initial data collection trip to the research site, the Tshulu Trust, a non-governmental organisation (NGO) was approached to assist with the preparation and execution of the empirical part of the study. The Tshulu trust is situated within the Ha-Makuya Village, and its members are familiar with the area as well as the protocol involved to be able to conduct research in the specific village. They are also trained gatekeepers, and often act as guides and translators. Their knowledge of cultural best-practice was especially crucial in obtaining the permission of the village Chief to conduct research in the village.

I considered the most important fieldwork preparation to be the development of qualitative skills which is closely linked to the ethical considerations that should be given to any study.

This entailed aspects such as contextualising the study, ensuring the most appropriate ways in which to show appreciation; developing qualitative listening skills; asking open-ended and non-threatening questions; probing the responses in order to explore the participants' answers; being flexible to handle a change in direction at any given time, and lastly, not only to listen to what is being said, but to also take in visual messages as well. I believe that acquiring these skills led to collecting information rich data (Theron & Malindi, 2012). The way in which these skills were applied to this specific study will be explained in more detail when the data collection process is discussed later in this chapter.

3.3.2 Research site and participants

The research site and participants were selected with a view to obtaining the most useful information to answer the research questions. This will be discussed below.

3.3.2.1 Research site

This study involved a situation analysis on health education for young children to promote the prevention and control of malaria in the Ha-Makuya Village. The reason for selecting this specific village was that the incidence of malaria is relatively high mainly because a border is shared with Zimbabwe and Mozambique, as well as the fact that it is situated along the banks of the Mutale River, which increases the risk of malaria. Thus, this study was conducted mainly in the Ha-Makuya Village.

As the study was concerned with health education, it was considered appropriate to involve the Provincial Departments of Health and Education in Limpopo, specifically the district officials. Three schools in the rural village of Ha-Makuya were approached to participate in the case study. It is important to mention here that, during the planning stages of the study, it was decided to approach three schools to participate in the case study. However, at the beginning of 2016, two of the schools had merged due to a directive from the Department of Education to optimise resources. This led to the study being focussed on only two schools which resulted in a reduction of participants. The research questions required that information be collected from primary schools (which include principals and teachers), health workers and local government departments.

The schools were chosen in consultation with and under the advice of the Tshulu Trust, for their distances from each other and keeping practical considerations such as the availability of the schools to participate in mind. The aim was to cover as large an area as possible in the time available. The Tshulu Trust office in Ha-Makuya was used as a central point of departure and its staff members acted as gatekeepers, translators and guides. Distances to the schools ranged from 40km away to the furthest school, to a mere 2km between schools. Access to the schools was arranged beforehand by the staff of the Tshulu Trust via emails (permission letters) (Annexure A) printed out and taken to the schools. The signed letters were returned, granting the researcher permission to conduct the research at the schools. The schools were reached by vehicle, via rural, unpaved roads, and reaching the furthest school 40km away, took more than an hour of driving one way.

Conducting research in a rural area can present many challenges, especially when one is not prepared and familiar with the surroundings. Information and advice from the members of the Tshulu Trust on the research site proved to be invaluable. Prior consent from the village Chief to conduct research in the village was obtained. Athanasou et al. (2013) advise that a researcher should familiarise him or herself with the research setting before setting out to collect the data. One of the aspects they mention is that one should be culturally competent (Athanasou et al., 2013), and for this purpose, a gatekeeper, or a representative from the community, is the ideal person to learn from. Foreseeable challenges included the vast distances between the schools, unavailability of electricity in some parts of the rural area, the unwillingness of participants to participate in interviews, as well as language barriers. It was therefore important to conduct interviews during the day, at the convenience of the participants, and at a venue that was both suitable and comfortable. The interviews at the schools took place in the principals' offices and the classrooms, interviews at the Departmental offices took place in the office of the district official, and the health workers were interviewed in the office of the Clinic Manager.

3.3.2.2 Participants

Qualitative research is aimed at creating an in-depth description of the phenomenon (Creswell, 2011). Sampling in qualitative research should therefore be related to the research question, the methodology and the purpose of the study (Creswell, 2011).

The most common sampling strategy for qualitative research is purposive sampling (Hoepfl, 1997). Qualitative sampling is purposive when it sets out to select applicable information sources (samples) to explore the phenomena (Fossey et al., 2002). Participants are also chosen because they were likely to generate useful data (Patton & Cochran, 2002). When I considered the selection of the sample for this qualitative research study, it was important to identify the most appropriate participants and adequately sample the information sources in order to obtain information richness and to answer the research questions (Fossey et al., 2002). Creswell (2011) concurs in stating that there is no “right” size in qualitative sampling. However, qualitative research generally makes use of small sample sizes in order to obtain rich data (Creswell, 2011). The sample for this study was thus small, and consisted of eight participants, who were believed to be able to provide the desired information. This would mean that the findings could not be generalised, as the sample was not representative of the population. However, I aimed to minimise sample bias by including a range of the population in the sample (Patton & Cochran, 2002) such as principals, teachers, nurses and district officials.

Guba and Lincoln (1994) consider the most useful type of purposive sampling to be maximum variation sampling. This sampling method aims to capture and describe central themes and key outcomes, as well as yield detailed descriptions and identify shared patterns that traverses a great deal of participation variation (Guba & Lincoln, 1994). In order to answer the research questions, the key selection criteria for selecting the participants for this study was however stratified purposive sampling, as the aim of this type of sampling is echoed in the aim as set out by Patton and Cochran (2002) to be an illustration of the characteristics of a particular subgroup of interest in order to compare their views and attitudes toward the issue being studied.

For the purposes of this study, participants were thus selected based on their involvement in and knowledge of the phenomena being studied namely health education for the control and prevention of malaria. I considered the selected participants to be the most relevant and appropriate sources of information, and in the obvious positions to answer the research questions. A brief summary of the participants and the research site they represented follow in the table below:

Table 3.1: A summary of the participants

	Title	Sector represented	
		Education	Health
Mr Muvhango	Principal		
Mr Baobab	Principal		
Mrs Newman	Teacher		
Mrs Elsa	Teacher		
Mrs Anna	Teacher		
Mr Luke	Official		
Sister Dora	Nurse		
Sister Sophia	Nurse		

The sample included principals of the selected primary schools, Foundation Phase teachers, a district official at the Provincial Department of Education in Limpopo and sisters at the local community clinic in the Ha-Makuya Village. All the participants were adults from the community, and were considered to be educated and knowledgeable in their various fields. The sample consisted of five females and three males. Not all the participants were comfortable speaking English, and an interpreter assisted during the interviews with these participants. Before the interviews started, the participants were informed that their responses to the questions would be treated as anonymous. They were also informed that participation in the study is voluntary, and that they could decline or withdraw from the interview without penalty. They were then given a broad outline of the intended study, and a consent letter to sign, which stated all the above. This aspect of the study will be discussed at length later in this chapter.

The study used a small number of participants, (eight) with the aim of collecting a large amount of data, as it is important to collect sufficient depth of information to fully answer the research questions. It was further decided not to make use of learners in the primary schools as participants, as their views and perceptions on malaria prevention and control would not be relevant to answering the research questions asked in this study.

This sample consisted of educated professionals, and was thus not representative of all the people in the community. However, for this specific case study, a broader/larger, more representative sample would not yield the rich data that was required to answer the specific research questions.

The participants were selected according to the criteria as set out below:

(i) Principals

The principals of the two primary schools were selected because they were considered to be knowledgeable on policies. They are also responsible for policy implementation and monitoring in the schools, and specifically in the classrooms. As this study also aimed to investigate what policy (such as CAPS and other relevant policies on malaria prevention and control) dictates on malaria education in the classroom, principals were included in the purposefully selected sample. Principals would also have a better idea of existing partnerships with regard to malaria education, and the control and prevention of malaria in schools.

Semi-structured individual interviews were conducted with the principals of two primary schools.

(ii) Foundation Phase teachers

The rationale for selecting Foundation Phase teachers was because this study is focussed on malaria education for younger children. It was also assumed that Foundation Phase teachers would have a better understanding and deeper knowledge of the CAPS curriculum, especially aspects concerning health education in the curriculum for the Foundation Phase. They would be in a position to give answers on the content of the curriculum, how it was taught, and how policy was implemented in the classrooms. The teachers were also able to answer particular questions on malaria incidence among children, and how malaria was addressed in the classroom, as well as the effect of malaria on teaching and learning.

Schools in the Ha-Makuya Village are not large. Due to the low numbers in the schools, both of the selected schools only had two Foundation Phase teachers. The two teachers were interviewed simultaneously.

It was found that not all the teachers could communicate comfortably in English, and the interpreter assisted in ensuring mutual understanding between the interviewer (me) and the teachers.

(iii) District officials

This study was concerned with investigating health education, and specifically strategies by the relevant role-players to promote the prevention and control of malaria in this endemic area. Questions were asked on existing policies on this matter, as well as cross-sectoral collaboration between government departments to address the issue. It was therefore considered appropriate to approach the Provincial Departments of Education and Health, and request the relevant district officials to be participants in this study. District officials were thus in the best position to answer in-depth questions on policy-related matters, such as existing policies on malaria prevention and control, as well as policy implementation and control measures to evaluate the successful implementation of policies in schools. They were also believed to be knowledgeable about existing collaboration measures between government departments, and would be able to provide suggestions on how to improve communication and collaboration.

The circuit manager of the Department of Health was however, unavailable for an interview. I thus only interviewed the circuit manager of the Department of Education. Even though information was only provided by one government department, it was nevertheless a very insightful interview, which yielded rich data.

(iv) Health workers

In rural villages such as the Ha-Makuya Village, where the distance to a hospital is usually considerable, local clinics are often the first port of call for most medical emergencies. It is also the place where the community is given information on health matters. Thus, when locals are faced with the symptoms of a disease such as malaria, they visit the nearest clinic.

Consequently, it was assumed that health workers (nurses) at the Ha-Makuya clinic would be knowledgeable on all aspects of malaria, such as the knowledge and perceptions of the community on malaria awareness, the incidence and mortality rate of malaria, prevention and control measures as well as platforms for communication. They would also be able to suggest improvements on current practices regarding malaria prevention measures. After obtaining permission from the Clinic Manager, two nurses from the local clinic were interviewed.

Table 3.2 indicates the suitability of the selected sample in answering the research questions of this dissertation, meant to ultimately answer the main question, namely: To what extent does Foundation Phase health education contribute to the prevention and control of malaria in the Vhembe District? The highlighted areas indicate where participants were in a position to provide answers and the diagonal lines indicate inability of participants o provide any data.

Table 3.2: Suitability of selected to participants to answer the research questions

Research questions	District Officials	Principals	FP teachers	Health workers
How do policies of the government departments address malaria education in the Foundation Phase?				
What strategies do schools and government departments, as key stakeholders, employ to promote the prevention and control of malaria through health education in the Ha-Makuya Village?				
What are the strengths and weaknesses of health education, specifically on malaria control and prevention in Early Childhood Education in the Vhembe district?				

3.3.3 Data collection

I considered the most important fieldwork preparation to be the development of qualitative skills which is closely linked to the ethical considerations that should be given to any study.

This entailed aspects such as contextualising the study, ensuring the most appropriate ways in which to show appreciation; developing qualitative listening skills; asking open-ended and non-threatening questions; probing the responses in order to explore the participants' answers; being flexible to handle a change in direction at any given time, and lastly, not only to listen to what is being said, but to also take in visual messages as well. I believed that acquiring these skills would lead to collecting information rich data (Theron & Malindi, 2012). The way in which these skills were applied to this specific study will be explained in this section.

This study dealt with measures taken by people in authority to control malaria. Questions regarding these measures, possible partnerships between the Departments of Education and Health, the extent of community involvement as well as the impact of the CAPS curriculum and other relevant policies had to be answered. For this purpose, data were collected by means of interviews and document analysis. The empirical part of this study was conducted over a six day period in March 2016, in the rural village of Ha-Makuya. The aim of using multiple data sources was to collect information rich data, which would help in my understanding of the views and perceptions of the participants regarding health and malaria education, as well as to answer the research questions. A discussion on the manner in which these data collection techniques were employed in this specific study, follows.

3.3.3.1 Interviews

One of the two most popular forms of data collection for qualitative research is interviews (Hoepfl, 1997). Seabi (2012) defines interviews as a two-way conversation where the interviewer asks the participant questions in order to collect information and to learn more about the participant's ideas, opinions, beliefs and views. Semi-structured individual interviews, made up of open-ended questions aim to define the area to be examined (Patton & Cochran, 2002), as well as to enable a more focussed examination of the phenomena (Fossey et al., 2002). For this type of interview to be successful, I made use of a topic or interview guide, which consisted of the key questions to focus and direct the conversation, as well as useful prompts to encourage a flowing interview (Patton & Cochran, 2002).

For the purpose of this study, and to answer the research questions in particular, as well as the questions set out in the interview protocol (Annexure B), semi-structured individual interviews were conducted with the principals of the primary schools and the departmental officials. The interview protocol consisted of open-ended questions and these key questions were used to focus the interview and to encourage the flow of the conversation. Semi-structured interviews were also conducted with the Foundation Phase teachers and the nurses. This was done with the aim to explore the research issue being studied, namely malaria prevention and control strategies, and efforts by authorities to address this issue.

Garkovich (2009) defines key informants as people who are knowledgeable about the issues. Key informant interviews were thus conducted with the purposefully selected participants, because of their unique perspective on and knowledge of the issue being studied, and to get insider information on the issue, namely malaria prevention and control strategies in the area (Garkovich, 2009). The particular reasons for selecting the participants and the criteria for selection are discussed at length in section 3.3.2.2 on sampling above.

In-depth questions were asked in the various interviews to assess what the participants perceived to be the main issues on malaria prevention and control strategies, the strengths and weaknesses of existing strategies, suggestions to improve current best-practice as well as their perceptions on the root of the issues facing the community regarding malaria and health education in the district. The main purpose of these interviews was to define the nature of the issues around health education, to gauge the perceptions and attitudes of the participants on the issue, and to assess whether the schools could be used as a resource to address malaria prevention and control (Garkovich, 2009).

3.3.3.2 Document analysis

Another method of data collection that assisted in answering the research questions was document analysis. This entailed the exploration of written texts and documents such as available policies from the local Departments of Health and Education (including the CAPS curriculum), reports on malaria and how it was managed in the Ha-Makuya Village, and any other kind of relevant written data that I could obtain.

It was my opinion that written records would give me a clearer understanding of the situation in the Ha-Makuya Village, and more specifically the situation with regard to the malaria phenomenon being explored.

As this study was not so much concerned with measuring the actual incidence of malaria as with the measures taken to control it, the data could be collected at any time of the year, and not necessarily during the summer months when mosquitos are most active. However it was envisaged that the collected information would be richer during the summer months, when mosquitoes are most active, and the prevention of bites are most prevalent in the minds of the community/sample. Thus, data was collected during March – while the weather was still very conducive to mosquito breeding, and the mosquitoes were very active.

During the planning phase of the dissertation it was envisaged that the schools, district offices and local clinics would have policies and other relevant literature available on malaria prevention and control. However, this was not the case. It proved that policies and pamphlets were not as readily available as I had initially assumed, and the main policy document that was thus studied, was the CAPS document. The only other available literature was posters on the walls of classrooms and pasted on the walls at the clinic and other unrelated policies that were found in a search on policies relating to health education and the promotion of malaria in schools. When asked about the existence of a district-specific policy on malaria prevention or health education that included strategies on malaria prevention and control, the principals and the district official admitted that no such policies exist. The lack of readily available literature could be seen as a weakness in the current strategies employed – however, it must also be borne in mind that it might not be financially viable for the institutions to print a large number of posters or flyers or pamphlets. I also learned that information on malaria prevention and control is communicated verbally to members of the community through regular community meetings, and thus printed media would prove unnecessary.

It also emerged during an interview with a district official that policy on malaria prevention and control should be developed by schools, should they wish to have such a policy in place. This observation concluded that the policies as mentioned in Chapter 2 are indeed the only existing, though dated, policies on malaria.

Chapter 2 (see Chapter 2.6.1) gives a full discussion on the available policies on malaria prevention and control through health education. These policies and their aims and stipulations are summarised again briefly here:

- The “Guidelines for the Prevention of Malaria in South Africa” (National Department of Health, 2009) is not a policy, but it also incorporates the guidelines for the prevention of malaria as set out by the WHO. These guidelines provide information to health care practitioners on the most suitable interventions for malaria. It also highlights aspects such as awareness, prevention, diagnosis and correct and effective treatment.
- “The Malaria Control Policy” was developed by the province of KwaZulu-Natal. This policy aims to reduce mortality and morbidity due to malaria in high risk areas by providing access to early diagnosis and prompt treatment locally (KwaZulu-Natal, 2000). Community involvement is recognised as an important factor to ensure the success of the malaria control programme. It also mentions community education on the correct preventive measures and treatment procedures. What I reckon to be the most relevant part of this policy to this study is the emphasis of this policy on the fact that education should focus on schoolchildren and the training of teachers.
- The “School Health Policy and Implementation Guidelines” (National Department of Health, 2011) (last reviewed in 2011) is the most recent policy. Brief reference is made to the Health Promoting Schools Initiative mentioned earlier in the literature review (see section 2.4.2). This policy also acknowledges the fact that the delivery of school health programmes in most parts of the country is currently sub-optimal and that it is faced with several challenges. The policy further aims to provide the necessary framework for reorganising school health programmes, and it mentions that intersectoral collaboration with different sectors such as the Departments of Health (DoH) and Basic Education (DoBE) as the key role-players, is required. The policy also states that it would be ideal to incorporate health promotion activities into the school curriculum to ensure on-going input throughout the school years (National Department of Health, 2011).

- The Curriculum and Assessment Policy Statement (CAPS) (specifically Grade 3 Life Skills, and the subject Personal and Social Well-being) was examined for the purpose of this study. According to the policy statement Life Skills is essential for the holistic development of learners. The study area *Personal and Social Well-being* is considered an important study area for young learners who are still in the process of learning how to care for themselves and their personal health. In reference to the stipulations of the School Health Policy and Implementation Guidelines mentioned above, namely that health promotion activities should ideally be incorporated into the school curriculum, it is my view that malaria education could possibly be introduced under the topics of “Insects” and “How some insects harm us”.

These policies all agree on the importance of intersectoral collaboration, community involvement and the integration of health education into the existing curriculum to ensure the successful implementation of malaria control programmes This reiterates the views in the above reviewed literature and one can thus infer that community involvement and health education, as well as partnerships between the stakeholders is imperative in the fight against malaria.

Multiple data collection strategies are often used in qualitative research as a measure to ensure a better understanding of what is being researched and is also a way to ensure triangulation (Fossey et al., 2002). This observation proved to be very important for enhancing the quality of the data, as gathering data from various sources in various ways demonstrated different aspects of situations and experiences, and helped to describe them in their complexity (Fossey et al., 2002).

3.3.4 Data analysis

This study was based on the interpretive paradigm. According to Lincoln and Guba (1985), researchers in this paradigm prefer inductive data analysis. The purpose of inductive data analysis is to identify the multiple realities that might be present in the data (Lincoln & Guba, 1985). This means that the raw data must be analysed to identify recurring themes or categories.

Because interpretivism is based on the assumption that there are many possible realities, this research was conducted in its natural context (the Ha-Makuya Village) to reach the best possible understanding of the phenomena being studied, namely strategies for the prevention and control of malaria - and also because the realities cannot be understood in isolation of its context (Lincoln & Guba, 1985), which implied that it was best to understand the phenomena under investigation in its natural context.

In listing the assumptions of the interpretivist perspective, Creswell et al. (2010) summarise the above by stating that “Our knowledge and understanding are always limited to the things to which we have been exposed … To conceive the world therefore as external and independent from our own knowledge and understanding, is to ignore the subjectivity of our own endeavours” (Creswell et al., 2010:60). Thus, when the data were collected, I became the instrument, asking the broad questions to the participants, with a view to allowing them to share their experience with the phenomena being studied (Creswell et al., 2010). In turn, I also assigned my own interpretation to what was being studied. This was one of the major criticisms of the interpretivist paradigm, namely the subjectivity, and also the failure of the approach to generalise its findings beyond the situation being studied.

Nieuwenhuis (2010a) asserts that qualitative data analysis aims to establish how participants make meaning of the phenomenon under investigation by analysing inter alia their perceptions, attitudes, and knowledge in order to evaluate their construction of said phenomenon. In agreement with the views of Lincoln and Guba (1985) above, Nieuwenhuis further states that the best way to achieve this is through the process of inductive analysis of the qualitative data, with the main purpose of allowing research findings to emerge from the most frequent and dominant themes found in the raw data (Nieuwenhuis, 2010a).

This view is echoed by several authors. Bogdan and Biklen (1998) define qualitative data analysis as “working with data, organising it, breaking it into manageable units, synthesising it, searching for patterns, discovering what is important and what is to be learned, deciding what you will tell others” (Bogdan & Biklen, 1998:145). Fossey et al. (2002) have a similar view to this process.

They consider the analysis as a process where data are reviewed, synthesised and interpreted in order to explain the phenomena being studied (Fossey et al., 2002). Hoepfl (1997) also identifies two stages to the analysis procedure, where the first stage includes the identification and coding of recurring themes within the data, for each participant, and the second stage includes the identification of common themes and areas of variance across participants. The final step is to develop a structural synthesis of the core elements (Hoepfl, 1997). These are the exact steps that I followed in the analysis of the data. The challenge was to place the raw data into logical, meaningful categories, and to examine the data in a holistic fashion to eventually find a way to communicate the interpretation to others. Corbin and Strauss (2008) add to this view by stating that analysis starts with the identification of themes emerging from the raw data, also known as open coding. The ultimate goal of this process was to acquire a new understanding of what was being studied, and to find answers to the research questions posed in Chapter 1 (Corbin & Strauss, 2008).

Sorting through the data can either be done manually or with the help of computer generated programmes designed to aid with this process (Hoepfl, 1997). However, Fossey et al. (2002) caution against the use of computer programmes for data analysis, as it can result in the researcher and the analytical process becoming distanced from the data (Fossey et al., 2002). The data for this study were analysed manually, as the answers to the research questions did not require intricate calculations.

This study thus followed an inductive approach in analysing the data. According to the stages identified out by Hoepfl (1997) above, the data were reviewed and recurring themes were identified and coded into categories of agreement and deviation. This study aimed to investigate strategies for malaria control and prevention in primary schools in the Ha-Makuya Village – more specifically looking at health education, policy and cross-sectoral collaboration. The data were categorised into themes which addressed these issues, summarised and interpreted in order to make sense of the information (Creswell et al., 2010:99), and to ultimately answer the research questions.

The data collection instruments such as the interview protocol was constructed with a view to ensure that the analysis of the generated data would yield rich information.

The recurring themes and divergence of patterns in the data explained in terms of the theoretical framework, in which cause and effect play a major role, will be discussed in more detail in Chapter 4.

3.4 TRUSTWORTHINESS

Different writers focus on different aspects of trustworthiness, from referring to it as a process, to focusing on the research findings. Peräkylä, (in Athanasou et al. (2013), asserts that trustworthiness refers to the process, or the way in which data are collected, analysed and coded. However, Patton and Cochran (2002), in their description of trustworthiness focus on the end result, and holds the view that a study is considered to be trustworthy when both the researcher and the user of the findings can be sure that the findings reflect what was initially set out to be investigated (Patton & Cochran, 2002).

In qualitative research, the validity of the research is also referred to as trustworthiness in terms of credibility, confirmability, transferability, dependability as well as the authenticity of a study (Athanasou et al., 2013).

This criteria to determine the rigour, or trustworthiness of the research had been proposed by Lincoln and Guba (1986). The credibility was described in terms of the value and believability of the findings, the dependability as how stable the data are, the confirmability referred to the accuracy of the data and transferability - whether or not the findings could be transferred/applied to a similar context (Lincoln & Guba, 1986). They further suggested strategies to ensure that these criteria have been met, and these strategies as well as how they were applied to my study, will now be discussed.

In order to enhance the credibility of the study, Lincoln and Guba (1986) suggest prolonged engagement with the participants and in the field. Thus sufficient time was spent with the participants and in the field in order to gain a full understanding of the context, and to build a bond with the participants (Baxter & Jack, 2008). The data for this study was collected over a period of one week.

As this was a case study on malaria prevention and control strategies involving three schools and four groups of participants in one rural village, the period was considered adequate.

Furthermore, researchers believe that dependability and confirmability can be ensured by an audit trail, which manifested through the keeping of meticulous, comprehensive and extensive field notes. As also suggested, the notes for this study included my observation of aspects other than those covered in the interviews and documents, such as visual messages (Fossey et al., 2002; Athanasou et al., 2013). It was observed, for example, that at the one school where data were collected, the principal was the only teacher present on the first day, and that on the day the interviews were conducted, a new teacher was appointed, bringing the total teaching staff to a total of three members, including the principal. The anonymity of the participants and the confidentiality of the data had to be maintained throughout (Lincoln & Guba, 1986; Patton & Cochran, 2002; Creswell et al., 2010). Although the participants were described in detail, care was taken to protect their identities at all times. Creswell et al. (2010) suggest another strategy to ensure the confirmability, or accuracy of the data, namely to verify the data. This study was conducted in a remote rural village, it was therefore important to verify that the participants' opinions had been correctly and accurately interpreted, before I left the research site. The participants were handed a copy of the transcript of their interviews the day after the interviews were conducted, and they were asked to comment on, verify, confirm and correct the transcriptions of their interviews (Creswell et al., 2010).

As this was a case study on a small sample, the findings can be transferred to a similar context in another setting. Effective strategies for the prevention and control of malaria in endemic areas, especially by looking at malaria and health education, can be applied to any other area where this phenomenon occurs – and for this reason I believe that the findings of this study is transferable.

As previously stated, this study made use of multiple data sources (interviews and document analysis). By resourcing information from these various sources, the validity of the findings was increased, also known as triangulation.

When the findings from each source are compared and there is a similarity, the probability that important issues have been identified, will increase, and so will the confidence in the results (Patton & Cochran, 2002). It is unfortunate that the district official from the Department of Health was not available for an interview. However, the information obtained from the interviews conducted with the nurses at the local clinic was useful in answering the questions originally meant for the official.

From the above, it can thus be clearly seen that the strategies employed in this study to ensure the rigour of the data were prolonged engagement, creating an audit trail, the keeping of meticulous field notes, observation, the maintenance of the anonymity of the participants and the confidentiality of the data, verification of the transcribed data, and the use of multiple data sources for enhanced triangulation.

3.5 ETHICAL CONSIDERATIONS

As mentioned earlier, the ethical principles for research are based on the Belmont Report, drawn up by the National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research in 1978 (National Commission for the Protection of Human Subjects of Biomedical Behavioral Research Bethesda MD, 1978). This report established three ethical principles as guidelines for all research participants namely kindness (non-maleficence and beneficence), respect and justice. In this study, adherence to these principles were reflected in applying the guidelines of obtaining informed consent and ensuring voluntary participation, the protection of privacy, and maintaining the confidentiality and anonymity of the participants. A detailed explanation of the sample, sampling method and research site were given in sections 3.3.2.1 and 3.3.2.2 of this chapter.

Ethical clearance to conduct the empirical part of the study was obtained from the Ethics Committees of the Faculties of Education and Health. (See Annexure C). Permission from the relevant government departments to conduct research in the health and education sectors in the Ha-Makuya Village was also obtained (Annexures D-F).

The following table illustrate how the above-mentioned guidelines were applied in this study:

Table 3.3: Application of how the guidelines were applied in this study

Ethical principle/guideline	Application in this study
Informed consent	Letters requesting permission to conduct research were sent to the principals of the schools, to the District managers of the Departments of Health and Education, as well as the village Chief well in advance of conducting the fieldwork for this study. These letters included a brief explanation, background and aims of the study, thereby contextualising the participants in terms of the relevance of the study. Permission to conduct the research was granted by all the relevant authorities. Upon conducting the interviews, I introduced myself and explained these aspects to the participants again, and asked whether there were any questions or uncertainty relating to the study that they might have. Participants were requested to sign the consent forms before the interviews began. Participants were also requested to verify the transcripts of the interviews for clarity and accuracy.
Protection from harm	I also explained to the participants that their participation in this study was completely voluntary, and that should they refuse to take part in the interviews, they would not be penalised in any way. No potential risks were envisaged in their participation in this study. Possible benefits, such as the prevention and

	control of malaria in the schools, and eventually the community at large, were explained to the participants. All the participants were adults, and the interviews took place during times and at venues that were convenient to them. The principals and district official were interviewed in their respective offices, the teachers in their classrooms, after the exams were written. The nurses were interviewed at the clinic at a time that they indicated would be convenient for them. The interpreters played an important role in ensuring that the language barrier was overcome, where participants (especially the teachers) felt more comfortable answering the questions in Tshivenda.
Protection of privacy, anonymity and confidentiality	In my introduction to the participants, I assured the participants that their privacy would be protected, and that their responses to the interview questions, and any discussions that ensued from these would be treated as anonymous and confidential. This was also reflected in the letters of informed consent signed by the participants before the interviews commenced. I also assured the participants that pseudonyms would be used to refer to any specific participant, or school in the analysis of the data and the findings. The storage of the data ensuing from the data collection was also discussed with the participants, as well as the fact that they could request to view the findings of the study.

3.6 CONCLUSION

This chapter detailed the methodology that I selected to use in this study in order to obtain a better understanding of the educational strategies that authorities use in the prevention and control of malaria in schools in the Ha-Makuya Village. The manner in which the qualitative research approach, informed by the interpretive research paradigm, using a case study were used, as well as the rationale for choosing each of these research methods and its concomitant instruments for data collection and analysis, were explained in detail. The appropriateness of the Ecological Systems Theory of Bronfenbrenner and its relation to this specific study was also discussed. The next chapter will focus on the specific findings emanating from the data analysis, and it will be discussed in terms of this theory.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The previous chapter outlined the detail of the methodology employed in order to collect the data required for this study. This qualitative study was situated within the interprevist paradigm, and a case study was conducted in order to establish inter alia whether strategies were in place for the control and prevention of malaria in primary schools in the Ha-Makuya Village, where the incidence of malaria remains high. Data were collected through interviews and document analysis. This chapter analyses the data, and present the findings and interpretation thereof by means of themes and categories identified during the analysis and synthesis of said data.

4.2 RESEARCH PROCESS

This study aimed to investigate whether schools in the Vhembe District employed any educational strategies to ensure sustained prevention and control of malaria through health education. It further aimed to establish if collaboration existed between authorities to promote malaria awareness. In order to answer the main research question, namely to what extent does Foundation Phase health education contribute to the prevention and control of malaria in the Vhembe District, information on policy stipulations, educational strategies, health education and cross-sectoral collaboration had to be gathered first (see Chapter 3).

The data were collected over a six day period during March 2016, while the weather was still warm enough for mosquitoes to be quite prevalent, and thus the matter of malaria alertness not too far down the list of priorities for the chosen population. Prior consent from the participants had been organised via the Tshulu Trust. A gatekeeper and translator had also been arranged beforehand, in case language proved to be a barrier. One of the questions that needed answering was whether or not there were any established measures in place to control or prevent malaria.

I looked at schools, and possible collaboration between government departments such as the Departments of Education and Health, as well as the involvement of the community in addressing this issue. Interviews were thus set up with principals, teachers, government officials and nurses at the local clinic (see Chapter 3.3.3.1).

It proved difficult to set up interviews with the official from the Department of Health, as a number of health workshops were held during the time the empirical data for this study were collected. However, the data collected from the nurses at the local clinic made up for the questions on collaboration between government departments, even though the knowledge of the health official on possible collaboration and policy-related matters could not be established. The fact that officials from the Department of Health could not be interviewed remained a challenge in the study.

It also proved to be challenging to get hold of the district official of the Department of Education as well, due to the fact that emails had not been delivered to the address provided on the departmental website. However, traveling from one school to the next, we encountered the principal of one of the previous schools we had visited. He was on his way to collect exam papers for the next day, and we offered him a lift (he would have either walked or hiked the vast distance to the District offices). During the course of the ensuing discussion on the empirical study, he then mentioned that he knew the relevant district official of the Department of Education, and provided me with a cellular number, which I could call and set up an interview. Communication via email had thus also proven to be a challenge. The interview with the district official from the Department of Education was thus successfully arranged for the following day.

The impact of policy stipulations on malaria prevention and control in schools was also intriguing, and this avenue was also pursued. The CAPS curriculum and what it prescribed in relation to malaria, and all and any other policies and pamphlets were studied (See Chapter 2. 6).

The following section provides the demographic details of the various research sites and participants.

4.2.1 Research sites

Despite concerted efforts by various global and local initiatives to reduce the incidence of malaria, the incidence remained high in the Vhembe District, for various reasons (see section 2.2.1). As this study was concerned with investigating what strategies were in place to the promote malaria awareness through health education in this specific location, three primary schools in the area were selected to participate in this study. As mentioned in Chapter 3, the offices of the Tshulu Trust were used as a central point during data collection (see Chapter 3.3.2.1). Interviews also took place where the participants would be most comfortable – which for teachers and principals would be the schools.

4.2.1.1 Muvhango Junior Primary

Muvhango is a junior primary school, situated 40km away from the Tshulu Trust offices, and traveling on the rural, unpaved and extremely bumpy road took more than one hour one way. During the initial arrangements three schools were approached to participate in this study. However, upon our arrival at the research site, we were informed that, due to the low numbers, the Department of Education had merged two of the identified schools into one, namely Muvhango JP. The school consisted of only three classrooms, and three staff members - the acting principal was also a teacher – and two other teachers. The total number of learners for 2015 had been less than 40, but with the merging of the two schools, increased to just over 50 at the start of 2016. The school only makes provision for learners from Grade R to Grade 3. The safety of learners and staff was ensured by the locked gates – which was very easily unlocked for the researchers, though. The school is set very deeply in the heart of this rural village, and is surrounded by massive baobab trees. We visited the school three times during the data collection process. The first visit was to introduce ourselves and to confirm that the pre-arranged interviews could still take place; the next visit was the following day, when the interviews were conducted with the teachers and the principals; and the third visit was to hand the transcripts of the interviews held on the previous day to the participants to ensure and confirm its accuracy.

Figure 4.1: The rural, unpaved road leading to Muvhango JP

Figure 4.2: 40 kilometres on this road could take more than an hour

4. 2.1.2 Baobab Primary

Baobab Primary is situated much closer to the central point, but with the rural road as described above, as well as on-going roadworks (a project is underway to pave this road) the access to this school was also challenging.

Baobab Primary is a primary school, and much bigger than the first school, in infrastructure as well as number of staff and learners, which totalled 240 at the beginning of the 2016 academic year. Both schools were no-fee paying schools, and provided learners with a cooked meal on a daily basis.

The interview with the principal took place in his office. It was interesting to observe that this office was also where the supplies of the feeding scheme were stored; it was used to hold an archive of books, as well as the photocopier and fax machine.

4.2.1.3 Department of Education

The offices of the Department of Education in Limpopo are clustered together, sharing space with the Traffic Department with signage indicating the various education districts clearly. On the day of the interview with the district official the offices were busy, as the end of term examinations were in progress, and teachers and or principals were continuously fetching and delivering exam papers. It was however possible to conduct the interview with the district official in his office. When I mentioned that I had sent numerous emails to the district, I was informed that the server was faulty, and that emails only sometimes reached their intended destiny. It was thus better to communicate via telephone, or personally.

Figure 4.3: Fortunately this could be considered heavy traffic – one other approaching car

4.2.1.4 Ha-Makuya Clinic

The clinic is situated right next to the offices of the Tshulu Trust. It is a fully functioning clinic, and had recently been renovated. The clinic serves the needs of the entire Ha-Makuya Village, and is often the first point of call for more serious cases meant for the hospital.

4.2.2 Participants

The following section provides a description of the participants.

Table 4.1: Biographical information for participants

	Age			Research Site Represented				
	25-35	36-45	46+	Baobab Primary	Muvhango JP	Department of Education	Department of Health	Ha-Makuya Clinic
Mr Muvhango			■		■	■		
Mr Baobab			■	■		■		
Mrs Newman		■			■			
Mrs Elsa			■	■				
Mrs Anna			■	■				
Mr Luke		■				■		
Sister Dora		■					■	■
Sister Sophia	■						■	■

4.2.2.1 Mr Muvhango

Mr Muvhango was the acting principal at Muvhango JP and had been teaching there for the past 21 years. He was appointed acting principal since the beginning of 2016 – with the merger of the two smaller schools into one. He is not only the principal, but also a teacher. He seemed very positive about the interview, and had participated enthusiastically.

During the first visit to the school, it became apparent that the principal was the only teacher on duty on that specific day. One teacher was away at a workshop, and the other teacher (newly appointed) was only expected to start teaching at the school the following day. He could easily discipline the children and put them to work while he participated in the interview. He seemed very fatherly toward the learners, and not at all very strict. The learners in turn responded to him very relaxed. The ambience at the school was very laid back.

4.2.2.2 Mr Baobab

Mr Baobab was the acting principal at Baobab Primary, and also a teacher. In contrast to the attitude of Mr Muvhango, Mr Baobab was much more formal and professional. Even though he also participated enthusiastically, he was at all times aware of his position as principal, and would also occasionally ask questions on the relevance of the interview questions. When the transcript was returned to him for verification, he was also the only participant who had comments and queries on the transcripts.

A common factor among the principals, and the teachers in general, was the pride in their jobs, which was evident in their dress: formal suits and ties in soaring temperatures, shiny shoes despite long walks to and from the school on dusty roads.

4.2.2.3 Mrs Newman

Mrs Newman was the newly appointed teacher at Muvhango JP. The initial protocol had required focus group interviews with Foundation Phase teachers. However, seeing that the school was not extremely large, and consisted only of two teachers and the principal, and also seeing that the other teacher was still away at a workshop, an adjustment was made, and Mrs Newman was interviewed individually.

Mrs Newman was new to the school and new to the area as well, as she had been teaching at a private school elsewhere before taking up her current position. She answered the questions very hesitantly and could not elaborate much. The translator proved invaluable in translating terminology as she was not very fluent in English. She did not seem to know much about malaria.

4.2.2.4 Mrs Elsa and Mrs Anna

Mrs Elsa and Mrs Anna were the Foundation Phase teachers at Baobab Primary. As this school was much bigger, with 240 learners, it was possible to conduct a combined interview with two of the FP teachers. Both had been teaching for more than 10 years, and their grasp of English was reasonable. The translator had to assist less than in the previous interview.

The two teachers seemed to complement each other's knowledge on the subject, even though Mrs Elsa seemed to know slightly more about malaria than Mrs Anna. Their participation seemed to become more enthusiastic towards the end of the interview.

What all the teachers had in common was a lack of knowledge on how issues relating to malaria and the relevant information on control and prevention were addressed in the CAPS curriculum. They also did not know about any other policies on malaria in schools.

4.2.2.5 District official – Department of Education

Mr Luke was the district official (circuit manager) from the Department of Education. He was very knowledgeable and enthusiastic about participating in the interview. He was well prepared to answer the questions, and could elaborate on many of the issues. The interview with Mr Luke was very enlightening, especially considering the fact that it was arranged at such short notice.

4.2.2.6 Nurses at the Ha-Makuya Clinic

Sister Dora and Sister Sophia were nurses at the local clinic. They had agreed to participate in the interview after verifying that I had permission from their district, and also after confirming with their manager, who was away at a meeting at that time. They had indicated that it would be preferable to speak to their manager, but as she was at a meeting, they would participate.

In order to ensure the trustworthiness of the data, the participants remained anonymous throughout the study, and the confidentiality of the data was maintained. As also set out in Chapter 3 (see section 3.4) the participants verified the accuracy of the transcripts of their various interviews after each interview took place. I further believed that the information gathered from the multiple data sources contributed to the trustworthiness of this study. This strategy for ensuring the trustworthiness is explained in detail in Chapter 3 (see section 3.4).

4.3 DATA ANALYSIS

This was a case study aimed at investigating what was being done in the Ha-Makuya Village to prevent and control malaria in schools. This qualitative case study was based on the interpretive paradigm and as such, the data were analysed using inductive data analysis. According to Lincoln and Guba (1985), inductive data analysis is the preferred method for data analysis by researchers. Inductive data analysis entails that the data be scrutinised and organised to identify recurring themes and categories, with the ultimate aim of distinguishing the research findings emerging from these themes and categories (see Chapter 3.3.4).

The research tool, namely the interview protocol was compiled by making use of open-ended interview questions and then used to obtain answers to the research questions posed in Chapter 1 (see section 1.3.1). By interviewing participants in their natural context, namely that of the educational and health environments, as well as the overarching setting of the rural village where the incidence of malaria remains high despite efforts to reduce the incidence, I gained a holistic understanding of the situation in the Vhembe District regarding the control and prevention of malaria. The participants varied in terms of position and level, and different sets of questions were thus set for the various participant groups. This was done in order to obtain information rich data. The transcribed interviews were used as the primary source of data. This section explains how the data were analysed, as well as the subsequent themes and categories that emerged from this analysis.

In order to prevent the researcher (me) and the analytical process from becoming distanced from the data, the data were analysed manually (see 3.3.4). The following steps were followed in the data analysis:

- I listened to the recorded interviews.
- The recorded interviews were then transcribed into text, and printed.
- The transcribed interviews were presented to the participants in order for them to verify the accuracy of the transcription.
- The transcriptions of the interviews with each participant were scrutinised several times in order to obtain a holistic picture of the raw data.

- Recurring, repeated and similar responses from the various participants were identified and coded (using different colour highlights to indicate the different patterns observed).
- These patterns were grouped together into themes that emerged from the synthesised data.
- Themes were further analysed into what appeared to be major themes and subdivided into smaller categories.

The following table indicates the themes and categories that emerged from the data:

Table 4.2: Themes and categories that emerged from the data

THEMES	CATEGORIES
Knowledge	Malaria
	Promotion of malaria awareness
	Malaria risk
	Attitudes and perceptions
Intervention strategies	Structures for health promotion
	Information sharing
	Distribution of information
Implementation of school curriculum	Curriculum content
	Life Skills
	Health Education
Cross-sectoral collaboration	Stakeholders
	Initiatives
	Suggestions
Policy	Malaria awareness in education
	Malaria awareness in health
	Policy implementation

The following section elaborates on the above themes and categories.

4.3.1 Theme 1: Knowledge

It was essential to establish the participants' knowledge on malaria. Participants were questioned on what they knew about aspects such as the cause, prevention strategies, symptoms and treatment of malaria, and how it is distinguished from other diseases with similar symptoms. Participants were further questioned on their knowledge of malaria not only in the immediate area, but also country-wide. Participants' attitudes and perceptions towards malaria were also deemed to be important factors in this study (see section 2.3.1), and the promotion of malaria awareness, particularly with regard to the control and prevention of malaria, also emerged as a category.

The principals of the schools had sufficient knowledge on malaria prevention strategies and treatment. They however emphasised that malaria is never taken lightly, and that children suspected of suffering from malaria are immediately taken to the clinic, and their parents are contacted. Both principals were in agreement that it was, however, the responsibility of the parents to deal with sick children.

The teachers' knowledge on symptoms and prevention strategies varied. Mrs Newman from Muvhango JP knew fairly enough about the symptoms, as she had taught in a private school previously, where malaria prevention and symptoms were taught to the learners. In response to the question on her awareness of the symptoms and treatment of malaria, Mrs Newman said:

> *"The person could have headache, the person will be weak, a loss of appetite, then that person might be affected by malaria."*

With reference to the treatment, she responded:

> *"The only way is to take that person to the clinic."*

However, when talking about the content in the Life Skills curriculum, it was evident that the same teacher's knowledge on the cause of malaria related only to the fact that it is caused by a mosquito:

> *"… And also fruit – you don't have to eat fruit that is not in a good condition just after two days when you want to eat that it still not going to be healthy because mosquitoes you can find them because it is rotten and mosquitoes like to stay in a place that is rotten – sort of she gave an example of rotten mangoes – and that mosquitoes like to live in the rotten mangoes – and you can get malaria from eating rotten fruit."*

Mrs Anna from Baobab Primary had indicated that washing of hands after coming out of the toilet is a prevention strategy.

The nurses were certainly knowledgeable about all the aspects pertaining to malaria. They also reported that teachers should know about symptoms and prevention, as they go out to schools regularly to give health education – specifically on malaria. Cases of malaria would be brought to the clinic, where patients would be assessed or diagnosed and treated. In extreme cases, the patients would be transferred to the hospital for specialised treatment.

The participants at schools could not elaborate on malaria being an issue other than in the Vhembe District. One principal acknowledged that this is a high risk area, and the teachers did not respond to the question on their knowledge of malaria as a risk elsewhere.

The sisters at the clinic were aware that malaria control is a problem in the specific area, but could not say whether it also posed a problem elsewhere.

It was evident from the responses from the principals, as well as the teachers, that schools did not promote malaria awareness at all, as this was not addressed in the curriculum. The district official also acceded to the fact that schools did not do much to promote the awareness of malaria. However, Mrs Newman indicated that malaria awareness was promoted at meetings of traditional leaders, and that the community was made aware of the relevant issues surrounding malaria at this forum.

When questioned on how teachers were informed about malaria, and whether they have to educate themselves on malaria, the translator interpreted Mrs Newman's response as follows:

> *"She said that, on her side, she had found out about malaria from the awareness that has been conducted in the meetings of the traditional leaders – because malaria has been categorised as important programmes - any person that has an understanding about health will have to address the other people on health issues that you come across. So the person who addresses them on health issues such as malaria has attended workshops." (Interpreter on behalf of participant)*

Even though their knowledge on malaria varied, the general attitude of the principals and teachers towards malaria was positive. They all knew that it was a dangerous disease that could be fatal if not treated immediately and effectively. It was observed that the teachers would not spontaneously introduce or approach the topic of malaria in the classroom, as they were very bound to the prescribed curriculum topics. They also indicated that they could not share information on malaria with other teachers as they did not have sufficient knowledge on malaria.

The district official was enthusiastic about initiatives to promote the awareness of malaria in schools, but was worried about the fact that schools tend to overlook the circuit, and would rather take directives from the district:

> *"… especially that we are a circuit, we are in direct contact with the schools, we should have known this. There should have been a very clear programme which must also be brought to our attention so that we know what is happening. So that we even in our meetings we encourage principals or teachers to participate in those programmes. Because, once you are a circuit manager, they don't actually receive information from you, sometimes they might not take it seriously. But once it is from district, because in other programmes we go for training."*

The sisters at the clinic were upbeat about malaria, especially as they were recording a reduced number of cases, compared to 2015. They indicated that they went to schools to offer health education.

They also indicated that the community at large was very aware of malaria, as was evident in the fact that some patients suffering from headaches would come to the clinic and demand to be tested for malaria.

4.3.2 Theme 2: Intervention strategies

The schools could offer no information on existing structures or interventions to promote malaria awareness. The principals indicated that they relied on parents and the nurses to deal with malaria related issues. Mmes Newman and Anna were not aware of any initiatives, but Mrs Elsa indicated through the interpreter that:

> "*the people from the projects (malaria projects) come and address them about malaria.*"

Further probing revealed that the "people form the projects" were actually representatives from the Department of Health. When questioned on how regular these visits occur, she indicated that they visit the schools once a year, during malaria season. They would leave posters on malaria, such as pictures of the mosquito that cause malaria, and pamphlets containing information on malaria prevention, symptoms and treatment.

The district official alluded to the successful campaign that was launched to address the prevention of HIV/Aids, and suggested that a similar campaign was designed and launched for malaria prevention. He also mentioned that nurses went to schools to educate learners and teachers about malaria, but that the circuit manger was seldom informed of when this would take place. Communication on this matter would reach him via circular after the fact, or schools would report a visit from the Department of Health. He suggested that this structure be looked at and formalised for more effective implementation of such interventions.

From the data it further emerged that there were some intervention strategies in place to promote malaria awareness, but that the knowledge and application of these strategies could be improved. Information sharing among those who had knowledge of malaria, and the distribution of information on malaria control and prevention were loosely structured, and could also do with improvement.

Even though information sharing would certainly be one way of dealing with promoting malaria awareness, it was evident that the topic of malaria was not a priority at schools. Principals indicated that they did not share information regarding any aspects of malaria with each other at all. The only mention of malaria was made when a new teacher had been appointed, and they would merely be informed that malaria is an issue as this is a high risk area, and that the teacher should be watchful for signs of malaria among the learners.

Teachers said that though cluster meetings were held once a quarter to share information, malaria was also never addressed here. She also said that they would not share information on malaria as they were not "skilled" in sharing information such as how they could assist learners and each other in the event of malaria infections at school. The information sharing at such meetings rather centres around curriculum content, and how to assist learners who were not progressing satisfactorily.

> *"Foundation Phase issues are discussed. Also get together as a cluster of schools in the area. Malaria would be one of the issues. Also to discuss how teachers can assist learners who are not competent in class. Find out what the problem is as it could be a problem at home." (Mrs Elsa)*

As also mentioned earlier in this chapter, one of the teachers stated that malaria awareness was addressed at the regular meetings called by traditional leaders, and that this forum was utilised as a way to distribute information to the community at large.

The nurses elaborated on this category. They indicated that they were responsible for health education in the schools and villages, and that this happened through community meetings where they would address the issue of malaria prevention. This often happened with the assistance of home-based carers and sometimes even the traditional healers. Information (such as information pamphlets) would also sometimes be distributed to the larger community at shops, schools and the clinic.

Traditional healers had also been educated on the gravity of malaria and the importance of timeous diagnosis and effective treatment, to such an extent that people seeking help from the traditional healers first, were brought to the clinic for treatment.

I questioned the district official on the vast distances between villages, and how information was distributed, with specific reference to the promotion of malaria awareness. It was interesting to learn that the vast distances did not pose a problem to them, as information on many topics was shared at community meetings held by traditional leaders. The district official offered a suggestion as to how information on malaria control and prevention could be shared more effectively:

> *"It's easy, but one other thing, which may be a strategy to ask, like other diseases like other issues which are burning to our societies, whenever we have got meeting, whenever we have got sports meeting, whenever we have got community meetings, let's talk about this malaria. That's disease strategy. Let's say people are meeting at the Chief's kraal, there must be an agenda. In the agenda, there must be an item around malaria, that is how it can work. That is how we can just spread the policy. But once we just keep quiet, like other meetings, remember HIV/Aids is taken as very dangerous, forgetting about this other diseases like malaria. Because children have been spreading this messages like when we are spreading HIV/Aids."*

4.3.3 Theme 3: Implementation of the school curriculum

The curriculum, specifically the content of the CAPS, and its relevance to malaria awareness was questioned. Participants agreed that the matter of health education was addressed in the subject Life Skills. However, this subject covered only basic topics on health education such as physical exercise, food preparation and hygiene and cleanliness. The question arose as to who was responsible for health education, as it emerged from the data that schools relied heavily on the Department of Health (nurses) to convey information on health education matters, such as malaria.

With regard to the content of the Life Skills curriculum and its relevance to or inclusion of malaria control and prevention, all the participants agreed that this was non-existent. The content related to general aspects such as cleanliness and healthy living.

The district official suggested that the teachers should go beyond the prescribed content and become creative. He made it clear that learners should not only be made aware of malaria prevention, but that it should become a way of life. He however also agreed that the content in the curriculum was not sufficient to address malaria awareness:

> *"No, I don't think so … but maybe what we are failing to do is to make our teachers aware. That when you are dealing with this content, you must go beyond what is there in the content, try to bring this one through... as practical as possible, sometimes let us bring in a person from Health just to ask about that content in the class. It is allowed... are we doing this? (plain same old thing) No. That is why are saying, more emphasis is for marks...So creativity in teaching is lacking."*

It is obvious from this answer that teachers only taught the prescribed content as set out in the curriculum, and that they were mindful of that which the learner would be assessed on – and thus only concentrated on teaching that content in class.

An interesting observation was that the responses from the circuit manager, principals and teachers were identical on the fact that health education in class only happened via the subject Life Skills. The lack of content in the curriculum on malaria control and prevention measures was glaringly evident. Teachers would also not initiate the topic of malaria spontaneously, as this would impede on the learning time for prescribed content.

The district official suggested that the subject advisors responsible for Life Skills address this, and include a section on malaria in the curriculum:

> *"I think even this curriculum advisers which are dealing with those subjects related to Life Skills and Life Orientation, they should be taking the messages across. The curriculum advisers to our teachers."*

As mentioned earlier in this section, health education in the classroom was addressed in the subject Life Skills. It was also pointed out that the curriculum content did not address malaria awareness at all. An interesting observation was that while interviewing the nurses at the local clinic, this term came naturally to them. This was intriguing especially because they used this term so comfortably when referring to their role in promoting malaria awareness among the school community. The learners would take this information back home, and in turn, inform their parents. It was thus evident that the schools relied on the nurses to cover health education on malaria prevention and control strategies. This was one way for information to reach the broader community. The district official also mentioned that this was one of the more successful ways in which information on HIV/Aids were disseminated to the community during the HIV/Aids campaign.

4.3.4 Theme 4: Cross sectoral collaboration

It was also essential to determine whether collaboration on malaria awareness existed between stakeholders such as the Departments of Health and Education and the community. Interviews with the district official and nurses revealed that some efforts to promote malaria education did exist, and they made suggestions on how to improve general collaboration and the dissemination of information.

The principals and teachers were not aware of any collaboration between the Departments of Health and Education on the promotion of malaria awareness. Neither could suggest ways in which to establish collaboration. The nurses considered the fact that they provided health education at schools and at community meetings as a collaboration effort.

They further considered the fact that they addressed the community at the meetings of traditional leaders as collaboration with the broader community, especially since this was done in collaboration with the home-based carers and the traditional healers.

The district official was also aware of the health education being done by the nurses, however, the lack of communication on these visits to the schools was a concern to him.

> *"Yes, of course. In fact, what is happening, they don't even contact me. They just go straight to schools. They have direct contact with the schools."*

On a question on prior arrangements to visit the schools, he responded:

> *"Yes, no arrangements, sometimes we receive letters from the Health Department that they are going to visit schools, especially at the beginning at the year. It might be once, sometimes there is no communication, they just go straight to the schools. In fact, they have not shown us their programmes."*

This illustrated the point of view of the district official that even though there was indeed a tenuous effort by the Department of Health to provide information on health matters to schools, this was not formalised or structured.

The district official suggested that the existing programme on the promotion of malaria awareness of the Department of Health should be affirmed and formalised through improved communication from the Department of Health. He was convinced that this approach could lead to improved participation by the principals and teachers. He also suggested workshops and training for teachers. The official was keen for this collaboration to be strengthened, as it very often happened that initiatives that were not administered correctly do not "kick off the ground".

4.3.5 Theme 5: Policy

Policy governs almost everything we do. It determines what should or should not be done in situations, and often protects the institution against certain liabilities (National Department of Health, 2011). Participants were questioned on their knowledge of any existing policies on the control and prevention of malaria in schools, how policy was implemented, and how implementation was ensured. Document analysis was also one of the data collection methods for this study. However, the only available policy was the CAPS document. All other policies on malaria – either in the study area or the country at large – were extremely out-dated.

None of the participants at the schools were aware of any official or existing policy on malaria prevention and control, or the promotion of malaria awareness in schools. The only policy that teachers could refer to was the CAPS curriculum, and as I've already mentioned, no mention was made in this document to the control and prevention of malaria through health education.

The district official confirmed that no such policy existed, but that schools should draft their own policies should they wish to have a policy on this specific matter.

> *"In fact, even the policies, is it not when we cause schools to draft their own policy - especially for HIV/Aids, when these policies are not there? But we are not strict with these ones, the malaria ones. It is a wake-up call, that we must enforce the malaria policy so that we exactly know what schools are doing."*

When questioned on their knowledge about existing policies on malaria prevention and control, the nurses were vague, and could not confirm whether or not there were indeed any policies in use. The nurses at the clinic could also only allude to pamphlets on malaria.

> *We don't know the name, but is it not that said about the prevention? They give us the pamphlet about the prevention of malaria." (Sister Dora).*

Principals were asked how they ensured that CAPS was implemented in the schools, and they responded that this was done through workshops by the Department of Education. They were then expected to keep track of the progress during the year on a “tracker” and report this progress to the Department when requested to do so.

The Departmental official indicated that they ensured policy implementation by monitoring the schools through regular school visits, and by giving the necessary support. Schools were requested to draft their own policies, and the SGBs should approve and adopt the policies. During school visits, these policies should be made available to the Department. The Department also requested either quarterly or monthly reports should any incidents occur regarding the specific policy.

The next section is a discussion on how the above data was interpreted in relation to the theoretical framework that informed this study.

4.4 DATA INTERPRETATION

At this stage of the dissertation, it is important to note once again that even though the context of this whole study was based on examining sustained strategies of malaria prevention and control for young children, children were not used as participants in the study. The emphasis was on determining the actions of the authority figures, and in turn, the influence that these actions might have on the young children.

The Ecological Systems Theory of Urie Bronfenbrenner was the selected lens through which this study was conducted. This theory defines five interrelated layers of environment (see section 2.6). The theory is concerned with influences of the environment to which the child is exposed on the holistic development of the child. According to this theory, any influences or changes to the environment will ripple through the layers surrounding the child, ultimately affecting the development of the child. Thus, positive influences will lead to positive development and the same holds true for negative influences or experiences.

The application of the Ecological Systems Theory in this study implies that if a child was surrounded by an environment where awareness towards sustained malaria prevention and control was promoted, especially in a high risk area such as the area being studied, it would contribute towards the healthy (holistic) development of the child.

From table 4.3 it is clear to see that the layers or relationships closer to the child are in a position to positively influence the child towards malaria awareness. On the other hand, the layers or relationships further away from the child seem to be almost negligent in their promotion of any malaria awareness. These layers however still have the potential to influence the child, be it positive or negative. The theory holds that influence in one layer could have a ripple effect on the other layers, and the closer layers have a two-way influence, both on the child, and from the child. It was thus clear to see that the awareness of malaria prevention and control should be increased in the outer layers, in order for the child to have a holistically positive view on this matter altogether.

The following table illustrates how the findings of this study relate to the theory:

Table 4.3: Bronfenbrenner's Ecological Systems Theory and its relation to the findings of this study

Bronfenbrenner Layer	Description	Represented by participant in this study	Findings (Influence on healthy holistic development)
Microsystem	Closest relationship Direct contact Child encounters the most social contact	Teachers/Principal	Malaria awareness not a priority Knowledge on prevention, symptoms and treatment not ideal Believe that parents are mainly responsible for handling illnesses such as malaria
		Nurses	Have sufficient knowledge on malaria aspects Educate the community through health education Provide health education at schools and community meetings
Influence on child development Closest relations with child have some awareness and knowledge as well as a positive attitude towards malaria Child's experience of malaria will be positive			

Bronfenbrenner Layer	Description	Represented by participant in this study	Findings (Influence on healthy holistic development)
Mesosystem	Collaboration between microsystems	School Local clinic Teachers/Principal Nurses District official	Schools (teachers and principals) rely on nurses (Department of Health) to deal with malaria related issues Nurses go out to schools and community meetings held by traditional leaders to promote malaria awareness Schools do not promote malaria awareness at all The local clinic distribute pamphlets on malaria causes, symptoms, prevention and treatment Collaboration between authorities exists, but is tenuous – communication needs attention
Influence on child development Tentative collaboration between microsystems Development of child could be negatively affected if this is not addressed			

Bronfenbrenner Layer	Description	Represented by participant in this study	Findings (Influence on healthy holistic development)
Exosystem	Larger social system No direct contact Child affected by either positive or negative dynamism	Vhembe Community Neighbourhood	Nurses believe that the community is aware of the risk posed by malaria Community attend meetings where nurses address malaria awareness Traditional healers are educated to bring malaria cases to the clinic Community seeks help at local clinic if malaria is suspected Attitude towards malaria – although aware, prevention and control is not a priority
Influence on child development Influence of this sphere could be improved if malaria prevention, control and treatment measures become a priority in the community			

Bronfenbrenner Layer	Description	Represented by participant in this study	Findings (Influence on healthy holistic development)
Macrosystem	Child has no freedom to choose Yet still has an influence	Policy CAPS curriculum	No policy on malaria prevention, control, treatment exists in district Schools do not have policies for the promotion of malaria awareness Content of the CAPS curriculum found lacking on information on malaria Health education done in Life Skills, but on general aspects such as personal hygiene and physical education
Influence on child development Even though this is one of the further layers, it still has an influence on the development of the child. Content of malaria is negligent in this sphere – this could lead to the child having a negative (non-existent) development experience regarding malaria			

Bronfenbrenner Layer	Description	Represented by participant in this study	Findings (Influence on healthy holistic development)
Chronosystem	Accumulative experiences over time in environment	Awareness campaigns Media influence	Influence of awareness campaigns could be positive Malaria awareness should be promoted the same way in which the campaign on HIV/Aids was managed
Influence on child development Awareness of malaria prevention strategies in the community could lead to the child adopting preventative behaviour The success with the earlier HIV/Aids campaign should be repeated to alert the community about malaria prevention			

The first interrelated layer, namely the **microsystem**, which is also the layer closest to the child, and where the most social interaction takes place, appears to be geared towards ensuring that the child would have some awareness towards the prevention and control of malaria, thus, a positive influence. However, it is interesting to note that the awareness was mostly fostered by nurses, at the school (see section 4.3.3). It would be expected that the parents and teachers, and not the nurses, would be the ones to provide this influence. However, the nurses addressed teachers and learners in the school environment, and in this sense, took on the role of a teacher. Nurses also educated parents on malaria awareness at community meetings. In this manner, the message of malaria prevention was spread to the layers closest to the child – thus ensuring that a positive influence was exerted on the child in terms of being aware of the relevant malaria aspects. With regard to answering some of the research questions, it was evident that even though schools did not prioritise the promotion of malaria awareness, the Department of Health (nurses) had a strategy in place to do this.

The influence of the next layer, namely the **mesosystem** which is the collaboration or relationship between the first layer (such as parents, teachers, and nurses) cannot be discounted, even though it is further removed from the child than the first layer. From the findings it seemed that the Department of Health was pro-active in relaying messages on malaria awareness, whereas schools did not promote this at all.

Schools depended on the nurses to deal with all malaria related issues. It was evident that the majority of the responsibility of creating malaria awareness in the community fell on the shoulders of the nurses. The School Health Policy and Implementation Guidelines (see section 3.3.3.2) suggested intersectoral collaboration between the key stakeholders, in this case being the Departments of Health and Education. It was thus evident that improved communication and collaboration between these departments should be fostered in order for this layer to also positively influence the child towards malaria awareness. Effective collaboration between these two departments would be invaluable in the fight against malaria in this affected area. In terms of answering the question on strengths and weaknesses of health education, the lack of a structured communication system and the tenuous collaboration that exists, was considered a weakness. Thus, in order for this layer to positively influence the child towards malaria awareness, this issue needed to be addressed.

The third layer involves the larger social system to which the child is exposed. This is the **exosystem** and even though there is no direct contact, the child could still be affected by any positive or negative dynamism in this layer. In this study, the Vhembe community represented this layer. Testimony from the nurses proved that the community should be informed about malaria prevention practices. However, even though the community was aware, malaria prevention was not a priority. Improved community awareness and involvement could lead to this layer having a positive influence on the development of the child (see section 2.3). Just as with the second layer discussed above, the community awareness and involvement needed to be addressed in order for this layer to have a positive influence.

The **macrosystem** was represented by policy in this study. This next interrelated layer of influence is one of the furthest layers from the child at the centre. Findings indicated that there was no existing policy on malaria awareness in schools. The CAPS curriculum also did not address the matter of malaria sufficiently. Thus this layer was found to be empty of any influence on the child. As mentioned in section 2.7, the child has no freedom to choose this structure and thus its influence on his/her development, yet the ripple effect of a negative dynamism in this sphere could result in a non-existing awareness of malaria.

The drafting of policies on malaria awareness and health education by schools should be addressed by the relevant government departments.

Accumulative experiences over time constitute the last layer, namely the **chronosystem**. This was represented by the awareness campaigns instituted by role-players. Findings suggested that there had been no awareness campaigns on malaria awareness, even though the campaigns on HIV/Aids were considered to be successful. It was also suggested that malaria awareness campaigns should be based on the same model as the campaigns for HIV/Aids, as a strategy to promote malaria awareness. The chronosystem allows one to see the influences (whether positive or negative) as they happened over time in the environments to which the child was exposed to (see section 2.7). The influence of and exposure to malaria awareness in this layer also needed to be improved, as for the previous layers, in order for the child to have an overall positive experience on malaria prevention.

It was thus evident that the holistic (positive) development of the child was truly dependent on continuous exposure to positive experiences and a positive environment. Reflecting on the interpretation of the data, it has to be emphasised that the Ecological Systems Theory, as the selected theoretical framework for this study, had proved to be invaluable in giving meaning to the data.

4.5 CONCLUSION

This chapter aimed to discuss the data analysis and interpretation process. This was done through inductive data analysis, where themes and categories were identified by using the research tools employed for data gathering, namely the interview protocol and documents (policies) that were examined. The interpretation of the data was presented in terms of the theoretical framework informing this study.

The aim of this study was to investigate strategies for malaria control and prevention in primary schools in the Ha-Makuya Village – more specifically looking at health education, policy and cross-sectoral collaboration. The findings revealed that primary schools did not promote the awareness of malaria control and prevention strategies at all – neither in the curriculum nor through any kind of intervention. It emerged from the findings that the community relied on nurses at the local clinic to address this issue.

It was further evident that even though nurses went out to schools to promote health, and more specifically malaria awareness, more could be done to involve the schools, in terms of formalised and structured programmes, and improved communication among stakeholders in this matter.

I believe that the findings as set out in this chapter went some way to providing answers to the research questions relating to the aim of this study, which will be answered in the next chapter. The conclusions and recommendations emanating from these findings will also be presented in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Malaria incidences in the Vhembe District remain high, despite concerted efforts to implement means for sustainable control and prevention, and the eventual elimination of this disease. The focus of this study was a situation analysis of health education for young children to promote the prevention and control of malaria in the Ha-Makuya Village, which is situated in the Vhembe District. This was done by looking at inter alia what schools did to promote malaria awareness, whether there were any collaboration or partnerships between the stakeholders in the community, and also what policy dictated in this regard. Empirical research was done to gather information, and this information was analysed and interpreted in order to establish the current situation in Ha-Makuya.

Chapter 4 provided a comprehensive discussion on the data analysis and interpretation process involved in this study. The findings were presented, and the relevance of the Ecological Systems Theory of Urie Bronfenbrenner, the theoretical framework selected for this study, was also discussed in terms of the findings. This chapter is dedicated to concluding this study. This will be done by briefly summarising the findings of the literature that was consulted and comparing these findings to the empirical research findings of this study. Thereafter the research questions stated in Chapter 1 will be answered by looking at what the findings revealed, in order to draw a final conclusion. Finally, recommendations will be made for relevant stakeholders, such as schools and policy makers, as well as for further research.

5.2 OVERVIEW OF LITERATURE AND EMPIRICAL FINDINGS

This section provides an overview of the literature that was consulted during the course of this study, as well as an overview of the empirical research findings.

5.2.1 An overview of the literature on malaria awareness

Literature has shown that malaria deaths had decreased, from being responsible for more than 2 million deaths annually in 2009, to just under 500 000 in 2016, with children younger than 5 years of age being the most vulnerable (see section 1.1). It is a serious disease caused by the bite of an infected female mosquito of the genus *Anopheles* (see section 1.4). The enormity of the consequences of this disease is evidenced in the extensive literature on this topic. It is furthermore acknowledged in the numerous initiatives by various global authorities on this disease (see section 2.2.1). MDG6 (one of the mentioned initiatives) has as its goal the global elimination of malaria by 2015. According to various reports on the progress of this goal, it had been established that South Africa was well on its way towards achieving elimination status (see section 2.2.3). Despite these initiatives, it was reported that malaria was still prevalent in the Vhembe District, Limpopo Province. This situation could be ascribed to a number of reasons or challenges, one of them being the fact that Limpopo shares a border with Mozambique and Zimbabwe, which leads to cases of imported malaria. Literature reveals that other challenges to achieving elimination status related to the implementation of effective interventions such as inter alia community involvement and the need for appropriate policies on this matter. Even though literature the topic of malaria abounds, the focus of this literature was found to be mainly on health, economic and social aspects of this disease (see section 1.3). However, the impact of malaria on education has yet to be explored intensively. As the focus of this study was educational, and more specific what was being done by schools and other relevant stakeholders to promote malaria awareness through health education, this gap in the literature was thus identified.

The role of the community and its involvement in the process of sustainable prevention and control of malaria are acknowledged in many studies (see section 2.3). The importance of having a clear understanding of a community's knowledge and perception of this disease before implementing any kind of intervention is also emphasised (see section 2.3.1). Furthermore the term "health education" (see definition in section 1.4) appeared consistently in much of the consulted literature.

Thus, health education and the use of schools as an entry point to convey health messages to communities had been suggested as successful interventions for the sustainable prevention and control of malaria (See section 2.4). Other successful interventions had been identified as establishing effective collaboration between relevant stakeholders such as the Departments of Health and Education (relevant to this study) and the drafting of national and provincial policies on health education for the promotion of malaria awareness, as well as the integration of any such interventions into existing structures (see section 2.6.1). The specific use of schools as a strategy for the promotion of malaria awareness (and more specifically the concept of health promoting schools) had been explored as a theme in this study (see section 2.4.2), as this is an existing structure, and it would be an obvious point for health and education to come together. The fact that only one health promoting school exists in South Africa was considered an opportunity for further research and exploration.

The lack of any updated policy on the promotion of malaria awareness through health education was evident in the literature review (see section 2.6.1), with the most recent document related to health education being the *School Health Policy and Implementation Guidelines*, last reviewed in 2011. The *Guidelines for the Prevention of Malaria in South Africa* is not a policy document, and is mainly for use by health care practitioners to provide them with information on medical interventions relating to malaria. The school curriculum is guided by the CAPS – which can be considered a policy. For this reason, the CAPS curriculum for Grades R-3 was examined, and the subject Life Skills in particular. With regard to the suggestion of implementing interventions into existing structures, the subject Life Skills was considered to be an existing "structure" into which health education focussing on malaria prevention and control strategies could be incorporated (see section 2.6.1).

5.2.2 An overview of the empirical research findings of this study

The empirical part of this study took place over six days during March 2016. The research site was selected because of the fact that malaria cases were still being reported in the Vhembe District, and schools in the Ha-Makuya Village were selected to provide answers to questions on malaria-related matters in education.

Likewise, participants were selected because they were considered to be knowledgeable and able to generate useful data (see section 3.3.2.2). As the participants included only a purposively selected group of individuals, this sample is not considered representative of the entire population. However, for the purpose of this study, the sample was adequate. The research tool used was an interview protocol, designed with open-ended questions to focus the interviews with the participants. The findings from the data generated from this process were sorted into themes and categories.

The first major theme that emerged from the findings was the participants' knowledge and perceptions on, and attitude towards various aspects concerning malaria such as symptoms, cause and prevention strategies (see section 4.3.1). Literature suggested that intervention strategies could not be successful if the knowledge, perceptions and attitudes of those in the affected communities were not taken into consideration (see section 2.3.1). It was found that out of the four groups interviewed, the teachers knew the least about the mentioned malaria aspects. The principals and district official had sufficient knowledge, and principals especially considered malaria in a serious light. The nurses could provide more than enough information on most issues related to malaria. From the interview with the nurses it emerged that they were responsible for providing health education at schools on all health-related matters, including malaria. Thus, the nurses provided health education at schools. It was also found that the nurses (as a directive from the Department of Health) were the only group of individuals that promoted malaria awareness in the community, especially at community meetings where the community would be informed verbally and made aware of current issues on malaria. Schools were found to be neglecting malaria awareness. Even though this was the case, not one of the groups of participants was found to have a negative perception or attitude towards malaria. All participants agreed on the gravity of malaria when it was not diagnosed early and treated efficiently. The district official was also very keen to introduce initiatives to promote malaria awareness in schools (see section 4.3.1). This finding varied from findings in previous literature findings on knowledge of people living in endemic areas being poor (2.3.1) in the sense that the sample was reasonably knowledgeable on malaria aspects, except for the teacher who indicated that washing of hands constituted correct preventive behaviour for malaria.

Findings on the importance of acknowledging the knowledge, attitudes and perceptions of people affected by malaria before any kind of intervention could be implemented (see section 2.3.1) concur, especially when taking into account the enthusiasm of the district official to implement interventions, and the positive attitude of the nurses.

Another major theme identified was that of existing structures or intervention strategies in place for the promotion of malaria awareness in the Ha-Makuya Village. Here it was found that schools (this included the principals and teachers) could offer no information on the existence of any kind of intervention strategy geared towards health education, with the specific aim of promoting malaria awareness as they were not aware of any existing strategies. An aspect that did however emerge was that schools, and the community at large, relied heavily on the nurses (and the Department of Health) for interventions such as promoting malaria awareness in the community (see section 4.3.2). It was also evident from the interviews with the nurses that they were the people in the community who were responsible for health education in schools and villages. They further indicated that this “health education” happened at the regular community meetings of the traditional leaders, where malaria would be an item on the agenda. Thus the community meetings called by the traditional leaders were utilised as a forum to distribute information to the community. The nurses also indicated that they went out to schools to distribute information on malaria-related matters. This was corroborated by the teachers at one school who confirmed that nurses came to schools once a year to address both learners and teachers about malaria (see section 4.3.2). It would seem that even though there were some kind of interventions in place, a more focussed and formalised way should be found to effectively communicate and implement these strategies. Previous findings in literature indicate that health education was a successful intervention strategy (see section 2.4.1) and therefore this finding was in agreement with previous findings.

The implementation of the school curriculum and more specifically health education was also questioned, and the findings from the interviews on this theme consistently indicated that the subject Life Skills addressed only basic elements of health education such as hygiene and cleanliness and that content on malaria prevention and control was non-existent (see section 4.3.3).

Once again the indication here was that schools did not consider health education on matters relating to malaria a priority. It was found that teachers were bound to teach only the content prescribed by the curriculum, and malaria prevention strategies were not covered. It was interesting to note the suggestions by the district official that teachers should become creative and teach beyond the curriculum, as the content in the curriculum was not sufficient to address malaria awareness (see section 4.3.3). He also suggested that subject advisors address the lack of content on malaria in the curriculum, and include a section on malaria prevention and control in the life Skills curriculum. This suggestion would align with the stipulations of the *School Health Policy and Implementation Guidelines*, namely that health promotion activities should be incorporated into the existing school curriculum (see section 2.6.1).

Intersectoral collaboration was the fourth theme. The *School Health Policy and Implementation Guidelines* also referred to intersectoral collaboration between relevant stakeholders as being an important intervention strategy (see sections 2.5 and 2.6.1). It was found that teachers and principals were not aware of any collaborative efforts for the promotion of malaria awareness. However, the nurses considered their role in health education as a collaborative effort. They addressed learners and teachers at schools, and they addressed the community at the community meetings. This was seen as collaboration between health and education sectors, as well as collaboration with the community, even though no formal collaboration arrangement existed. When asked about his awareness of any collaboration efforts, the district official from the Department of Education acknowledged the fact that nurses provided health education at schools, and that this could be seen as collaboration, but he expressed concern about the lack of communication on these school visits. He also suggested that the communication is improved, and that the collaboration effort be formalised in order for the existing programme to be strengthened. As this study was concerned with malaria-related matters from an educational point of view, very few studies exist on the success of intersectoral collaboration in the promotion of malaria awareness, and thus this finding is considered to be new.

The final theme that emerged from the findings was policy on health education in schools. None of the participants could confirm the existence of a specific policy on the promotion of malaria awareness through health education in schools.

The only policy that guided teaching was the CAPS, but as already mentioned earlier in this section, it lacked content on malaria. The district official could only recommend that schools should draft their own policy on the promotion of malaria prevention and control through health education.

When comparing my empirical research findings as set out above with findings of previous studies, I found that it corresponded to some extent with regard to the certain issues, such as the fact that health education was an effective intervention when it came to promoting malaria awareness. On other findings, it varied such as that the knowledge of those living in endemic areas were poor. People in the study area were informed and educated about malaria by the nurses at community meetings. Some of my findings are also new, as research on malaria from an educational point of view was found to be lacking (see section 1.2).

5.3 RESEARCH CONCLUSIONS

The research conclusions of this study will be drawn by answering the research questions as set out in Chapter 1 (see sections 1.3.1.and 1.3.2). The sub-questions will be answered first, leading to the final conclusion as answer to the main research question.

5.3.1 Secondary research question 1: How do policies of government departments address health education in the Foundation Phase?

The Curriculum and Assessment Policy Statement (CAPS) is prescribed by the Department of Basic Education. The CAPS Foundation Phase Grades R-3 was found to be the only policy that governs and directed teaching in the Foundation Phase. Although the subject Life Skills made mention of health education, it was very basic. The subject area Personal and Social Well-being was where issues such as nutrition, diseases, safety and violence were addressed. As stated in Chapter 1 (see section 1.4) for the purpose of this study, health education referred to learning that promoted the awareness of malaria and the acquisition of relevant skills required to make healthy decisions with regard to malaria prevention strategies. From this definition it was clear to see that health education, as defined for the purpose of this study, was not addressed optimally in the CAPS Foundation Phase.

The only other policy that addressed health education was the *School Health Policy and Implementation Guidelines*. However, even though this policy was aimed at schools, it was never implemented.

5.3.2 Secondary research question 2: What strategies do schools and government departments, as key stakeholders employ to promote the prevention and control of malaria through health education in the Ha-Makuya Village?

The Vhembe District remains a problem area with regard to the envisioned goal of malaria elimination. Literature studies suggested intervention strategies to promote the control and prevention of malaria, such as community involvement, health education, and intersectoral collaboration between government departments on aspects such as policy.

The one strategy that was implemented successfully in this area was community involvement, fostered by the community meetings called by traditional leaders. It was at these meetings that nurses educated the community on malaria-related issues such as prevention and control strategies, which constituted health education as defined for the purpose of this study. However, the effectiveness of health education at schools was negatively affected by a lack of communication between the two government departments. Thus, even though nurses (from the Department of Health) addressed health education (specifically on malaria) at schools, it was done without the knowledge and co-operation of the Department of Education. Consequently, the tentative effort at intersectoral collaboration was also considered unsuccessful. Furthermore, schools in the Ha-Makuya Village were totally dependent upon the nurses for the promotion of malaria through health education, and did nothing else to promote the prevention and control of malaria in the class.

5.3.3 Secondary research question 3: What are the strengths and weaknesses of health education, specifically on malaria prevention and control in the Vhembe District?

The extensive knowledge and positive attitudes of the nurses regarding malaria and health education could be seen as a strength for malaria prevention and control in the Vhembe District.

School principals and teachers, as well as traditional leaders relied on nurses to take responsibility for health education in the district. The dissemination of malaria-related information at community meetings could also be considered a strength in the sense that it fostered community involvement, which was regarded in a positive light when it came to the establishment of intervention strategies.

As mentioned in Chapter 4 (see section 4.4) the lack of a formal structured communication system and the tenuous collaboration between the Departments of Health and Education could be seen as a weakness. A further weakness could be ascribed to the fact that the teachers were not as aware of malaria prevention and control practices as they should be.

The lack of content on malaria-related aspects in the curriculum, especially in an area that was considered to be endemic, was also a weakness.

As mentioned in Chapter 3 (see section 3.3.3.2), the lack of policy on the matter of health education in schools was also found to be a weakness in the promotion of malaria awareness in this area.

5.3.4 Main research question: To what extent does Foundation Phase health education contribute to the prevention and control of malaria in the Vhembe District?

The current situation in the Ha-Makuya Village with regard to health education for the promotion of malaria awareness was found to be lacking in any effective educational strategies for the promotion of malaria awareness. It was found that teachers were unaware of basic malaria prevention practices, and did not address health education on malaria-related matters at all. The CAPS curriculum also lacked content on this topic. Health education was done mainly by nurses, who visited the schools once a year, and addressed malaria prevention at these meetings. The community was informed verbally on malaria prevention practices, also by nurses, at community meetings, and even though nurses addressed health education, the collaboration between the relevant stakeholders (the Departments of Health and Education) was not structured and formalised.

If the people in authority took the correct decisions regarding health education for the promotion of malaria prevention and control, the young child would benefit from these decisions. The same holds true for negative and incorrect decisions.

5.4 RECOMMENDATIONS

With reference to the research findings of this study, the following recommendations are intended for principals, teachers, policy-makers and further research:

5.4.1 Recommendations for government departments

The Departments of Health and Education are the main stakeholders in the matter of health education. The following are recommendations to ensure optimal promotion and the establishment of infrastructure for sustainable malaria prevention and control in the Vhembe District.

5.4.1.1 Recommendations for the Department of Education

Recommendation 1: Revising the CAPS curriculum

The Department of Education, as represented by the district official is ultimately responsible for monitoring schools with regard to inter alia policy implementation. The lack of any content on malaria prevention and control strategies in the existing policy (CAPS) should be addressed. Subject advisors on Life Skills should be requested to add a section on malaria in the existing Life Skills curriculum, in order for the young child to know from an early age what should be done regarding malaria, so that prevention becomes a way of life, and not merely a word heard from the nurses once a year.

Recommendation 2: Formalised collaboration between the Departments of Health and Education

The Departments of Health and Education should look strengthening the collaborative efforts by investigating the possibility of implementing the concept of Health Promoting Schools, especially in the Vhembe District, where malaria incidences were still being recorded.

As mentioned in Chapter 2 (see section 2.4.2) health promoting schools characteristically engage health and education officials, teachers and other relevant stakeholders in an effort to create a healthy school environment. Health promoting schools also implement policies and practices that respect an individual's self-esteem. This recommendation is also applicable to the Department of Health.

5.4.1.2 Recommendations for the Department of Health

Recommendation 3: Establishment of a streamlined communication system between stakeholders

The Department of Health has an existing system where nurses would go to schools and address teachers and learners in order to promote malaria awareness. Nurses are well-informed and prepared to do health education, not only at schools, but also at community meetings. This system should however be streamlined to ensure that the required communication happens effectively between the Departments of Health and Education, as major stakeholders in health education. The Department of Health should foster a better collaboration with the Department of Education, by formalising the communication between the two departments. Timeous notification of nurses' visits to schools, with adequate information on what is expected of the school in terms of preparation should be communicated to schools.

5.4.2 Recommendations for principals

The following are recommendations for schools, with regard to what principals and teachers should do to promote malaria awareness through health education

Recommendation 4: Drafting and implementing a school policy on malaria promotion

As principals are responsible for policy implementation in the schools, principals in the Ha-Makuya Village should draft a school policy on the promotion of malaria awareness through health education, and ensure that the policy is implemented by involving the SGB in drafting and approving the policy. Policy implementation could be done by requesting brief reports on incidences from teachers once a term, or as these incidents occur.

Recommendation 5: Fostering of effective partnerships with government officials

Principals should also foster a more effective partnership with government officials. This can be done through the establishment of a formal and structured communication system, so that all role-players, which include principals, officials, teachers and members of the SGB are always aware of all aspects regarding the governance of the school.

5.4.3 Recommendations for teachers

Recommendation 6: Self-education and in-service training on the promotion of malaria awareness

Teachers practicing in the Ha-Makuya Village should educate themselves about malaria by inter alia engaging more with available literature on malaria, and educate themselves on aspects of malaria such as the cause, symptoms, prevention and control of malaria. If teachers have the basic knowledge of these aspects, it will become easier to address malaria matters in the classroom – even though malaria does not form part of the curriculum content. Teachers could also be educated by the Department of Health through in-service training on the aspect of malaria education.

Recommendation 7: Teaching beyond the curriculum

Teachers could become more creative and teach beyond the curriculum. This could be done by having informal conversations to promote malaria awareness for example when a classmate had been diagnosed with the disease, or when it had rained excessively, and teachers could inform young leaners about the danger of stagnant water with regard to malaria infection. In this instance, more could be done to optimise the use of the posters on malaria that nurses leave behind when they address schools on malaria.

5.4.4 Recommendation for further study

Recommendations for further study emanating from this study include the following:

Recommendation 8: The implementation of Health Promoting Schools as a collaborative effort between the Departments of Health and Education.

My study focussed on the current situation in the Ha-Makuya Village on the promotion of malaria awareness through health education in schools. It was found that schools did nothing in this regard, as teachers were curriculum-bound. As the incidence in malaria is still high in this area, it would be an interesting study to investigate the implementation of a health promoting school in this area, simultaneously structuring and establishing collaboration between the Departments of Health and Education.

Recommendation 9: Updated policy on health education, with specific reference to the promotion of malaria awareness in schools – especially for endemic areas.

Literature on explicit policy with regard to the promotion of malaria awareness in schools by making use of health education revealed a lack of any kind of updated policy on this specific matter. Policies should be developed to address this paucity in malaria-specific policies for schools.

Recommendation 10: Community meetings in rural villages as a platform for health education

The findings of this study revealed that the community is educated on various matters at the community meetings. It was especially evident that nurses would address the issue of malaria awareness at such meetings. It would be interesting to investigate how the community meetings can be used as a forum for health education, within the parameters as set out by the traditional leaders.

5.5 CONCLUDING REMARKS

This qualitative research study set out to analyse the situation in the Ha-Makuya Village with regard to the promotion of malaria awareness through health education.

It explored the impact of policy on health education, investigated possible educational strategies for the promotion of malaria awareness and evaluated the strengths and weaknesses of health education on the prevention and control of malaria in the Ha-Makuya Village. The theoretical framework proposed that the young child is either positively or negatively influenced by exposure to the environment surrounding him/her. This implied that positive influences regarding health education would lead to a healthy child. Literature suggested various strategies for promoting malaria awareness through health education. Findings from the empirical part of the study revealed themes that eventually assisted in answering the initial research question.

When I initially set out to do the empirical part of this study, I had assumed many things, stemming from a perceived “privileged” background. I was prepared to deal with the lack of electricity in some parts of the Village; and to fight off mosquitoes. I had thought that I would have long conversations with the teachers on the very important topic of malaria, gaining great insight and information. However, being in the field humbled me and brought me to insights that I could not predict. I came to realise that people make do with what they have, even though it is very little. I came to realise that people are proud of what little they have. Teachers and principals took pride in their jobs, as was evidenced in their formal dress with the male teachers wearing jackets and ties in the extreme heat, and their shoes shone. Electricity had not been a problem once. Teachers were not in the least bit concerned about the threat of malaria as I perceived it, however, they taught what they had to teach with great passion and enthusiasm. The rural setting, with small schools and low learner numbers leave space for the personal touch, which was evident at the first school, where the principal was fatherly protective of the children in his care. Rural roads (or the lack thereof) did not put principals off to getting to the district office to fetch and deliver exam papers. They simply walk. And they get on with the business at hand: to teach the little children.

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7. ANNEXURES

7.1 ANNEXURE A: Request for permission to conduct research (participants)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education

Dear Sir/Madam

Request for informed consent to participate in research project

I am a student at the University of Pretoria and currently enrolled for the second year of my MEd in the Faculty at Education. I am in the process of completing one of the module requirements which is that I conduct research on my chosen topic and write a research report on my work.

My research project is titled ***"A situation analysis of health education for young children to promote prevention and control of malaria in the Ha-Makuya Village"***. Malaria kills more than 2 million people annually, and the majority of the victims are children younger than five years of age. Malaria is also responsible for up to 50% of deaths among schoolchildren .However, if malaria is diagnosed timeously and treated effectively, the mortality rate can be reduced. Despite efforts to prevent and control this disease, it is reported that the incidence of malaria is still relatively high in the endemic province of Limpopo, especially the Mutale Local Municipality. This research initiative aims to explore why the incidence rate remains high by analysing health education measures in the province (in terms of teaching and policy), and what is being done by the relevant stakeholders such as the government departments of Health and Education (in terms of collaboration) to address this problem, especially in the rural village of Ha-Makuya.

This project entails interviews with relevant role-players in this situation, and your willingness to participate in the project would be highly appreciated. Participation in this project would entail answering questions in an interview. Please note that your participation is entirely voluntary, and that you may withdraw your participation at any time, without penalty. Interviews are estimated to last between 30 to 60 minutes, and will be conducted at your convenience. Interviews will be recorded for data analysis only. Also be ensured that all information will be treated with the utmost confidentiality, and that your identity and the identity of your institution will not be revealed at all. The purpose of gathering the information will be to write a dissertation, and the findings of this research project will be available to you, at your request. After completion of this study, all information gathered during this study will be stored at the University, according to policy requirements.

If you agree to participate in this research project, kindly complete the consent form provided. If you have any further questions, you are welcome to contact me or my supervisor, at the contact details given below.

Yours sincerely,

_____ _____

Signature (Student) Signature (Supervisor)

Ondine Schubart
Email: ondine.schubart@up.ac.za

Room 4-1.7, Level 4, Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 1234
Fax +27 (0)12 420 5678
Email name.surname@up.ac.za
www.up.ac.za

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

Permission to conduct research (Village Chief)

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education
Department Early Childhood Education

The Village Chief
Ha-Makuya Village
Vhembe District
Limpopo Province

Dear Sir

Request for permission to conduct research

I am a student at the University of Pretoria and currently enrolled for the second year of my MEd in the Faculty at Education. I am in the process of completing one of the module requirements which is that I conduct research on my chosen topic and write a research report on my work.

My research project is titled ***"A situation analysis of health education for young children to promote prevention and control of malaria in the Ha-Makuya Village"***. Malaria kills more than 2 million people annually, and the majority of the victims are children younger than five years of age. Malaria is also responsible for up to 50% of deaths among schoolchildren .However, if malaria is diagnosed timeously and treated effectively, the mortality rate can be reduced. Despite efforts to prevent and control this disease, it is reported that the incidence of malaria is still relatively high in the endemic province of Limpopo, especially the Mutale Local Municipality. This research initiative aims to explore why the incidence rate remains high by analysing health education measures in the province (in terms of teaching and policy), and what is being done by the relevant stakeholders such as the government departments of Health, Education and Social Development (in terms of collaboration) to address this problem, especially in the rural village of Ha-Makuya.

This project entails interviews with relevant role-players in this situation, and your permission to allow me to conduct research in your village would be highly appreciated. Participation in this research project is entirely voluntary and participants may withdraw their participation at any time, without penalty. Interviews will be conducted with principals, teachers, community workers and traditional leaders in the village. Interviews are estimated to last between 30 to 60 minutes, and will be conducted at the participants' convenience. Interviews will be voice recorded for data analysis only. Also be ensured that all information will be treated with the utmost confidentiality, and that participants' identity and the identity of their institution will not be revealed at all. The purpose of gathering the information will be to write a dissertation, and the findings of this research project will be available to you, at your request. After completion of this study, all information gathered during this study will be stored at the University, according to policy requirements.

If you allow me permission to conduct research in your village, kindly complete the consent form provided. If you have any further questions, you are welcome to contact me or my supervisor, at the contact details given below.

Yours sincerely,

_____ _____

Signature (Supervisor)

Ondine Schubart
Email: ondine.schubart@up.ac.za

Consent form

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education

Consent form

I _____ agree / do not agree (delete which is not applicable) to participate in the research project titled ***A situation analysis of health education for young children to promote prevention and control of malaria in the Ha-Makuyu Village.***

I understand that I will be interviewed on this topic for approximately one hour at a venue and time that will be convenient for me, and that the interviews will not interfere with school and/or work activities. The interviews will be recorded.

I understand that the researcher subscribes to the principles of:

- *Voluntary participation* in research, implying that the participants might withdraw from the research at any time.
- *Informed consent*, meaning that the research participants must at all times be fully informed about the research process and purposed, and must give consent to their participation in research.
- *Safety in participation*, put differently, that the human respondents should not be placed at risk or harm of any kind, e.g. research with young children.
- *Privacy*, meaning that the *confidentiality* and *anonymity* of human respondents should be protected at all times.
- *Trust*, which implies that human respondents will not be respondent to any acts of deception or betrayal in the research process or its published outcomes.

_____ _____

Signature Date

Room 4-1.7, Level 4, Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 1234
Fax +27 (0)12 420 5678
Email name.surname@up.ac.za
www.up.ac.za

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

7.2 ANNEXURE B: Interview protocol

Interview Protocol

The Literature Review of the proposed study will inform the questions for this research. The questions that follow are provisional. It is envisaged that not all the questions will be asked of all the participants – for this purpose it has been divided into sections where the relevant participants are indicated. The interviews are estimated to last between 40 to 60 minutes per interview, and will be recorded. It will also be conducted at a time and place that is suitable and convenient for the participants. It is envisaged that the questions will be given to the participants beforehand in order for them to have an idea of the information required. At this point it is anticipated that participants will have already signed the consent letters which provide a background to the study and in which the conditions for participation in this study have been set out.

The questions to this interview encompass two research proposals. For the purpose of avoiding response fatigue from the participants, the questions for interviewing the principals and teachers have been combined. The titles of the two studies are:

- **A situation analysis of health education for young children to promote prevention and control of malaria in the Ha-Makuya Village**
- **The impact of malaria on Foundation Phase teaching and learning in Ha-Makuya, Vhembe District.**

Interview questions

Time of interview_____ Duration:_____

Date:_____

Place:_____

Interviewer:_____

Interviewee:_____ Pseudonym:_____

Position/Role: _____

Institution: _____

Male/Female_____

Malaria kills more than 2 million people annually, and the majority of the victims are children younger than five years of age. Malaria is also responsible for up to 50% of deaths among schoolchildren .However, if malaria is diagnosed timeously and treated effectively, the mortality rate can be reduced. Despite efforts to prevent and control this disease, it is reported that the incidence of malaria is still relatively high in the endemic province of Limpopo, especially the Mutale Local Municipality. This research initiative aims to explore the effects of malaria on teaching and learning at schools, as well as why the incidence rate remains high by analysing health education measures in the province (in terms of teaching and policy), and what is being done by the relevant stakeholders such as the government departments of Health, Education and Social Development (in terms of collaboration) to address this problem, especially in the rural village of Ha-Makuya.

Principals: (Individual Interviews)

Time of interview_____ Duration:_____

Date:_____

Place:_____

Interviewer:_____

Interviewee:_____ Pseudonym:_____

Position/Role: _____

Institution: _____

Male/Female_____

1. What do you know about the extent of malaria in:
   - your area,
   - your province or
   - the rest of the country?
2. What could be done to avoid malaria:
   - at home or
   - at school?
3. Are you aware of the symptoms of malaria and how would you treat these symptoms?
4. What do you do if any of your teachers or learners display any of these symptoms?
5. What are the current interventions (if any) in terms of a person diagnosed with malaria at:
   - school,
   - in the homes of learners or
   - in the community

6. (a) Are you aware of any deaths among your teachers or learners that were caused by malaria?

6. (b) If any deaths did occur, how do you report it to the health authorities?

7. Are you aware of any illnesses suffered by your teachers or learners that could be related to malaria?

8. What are the typical types of illnesses suffered by your teachers for which they are often away from school?

9. Are there processes in place at your school to assist learners, who happen to be absent for lengthy periods as a result of any other illnesses, besides malaria?

10. Does the school have a standard policy to assist learners who do suffer from the effects of malaria, how do you manage their school work or assist them to complete their tasks if they had been absent for some time?

11. (a) Are you aware of any current policies on the prevention and control of malaria in this Province?

11. (b) If yes – which policies/name them.

11. (c) How do you ensure general policy implementation in the school?

11.(d) How do you ensure the implementation of the CAPS (Curriculum and Assessment Policy Statement) curriculum in the school?

12. (a) Do schools promote awareness of malaria prevention and control?

12. (b) If yes – how?

12. (c) If no, do you as a school manager have a policy whereby the teachers have to inform the learners of malaria, its causes and consequences?

13. (a) How is health education addressed in the Foundation Phase classroom?

13. (b) How is health education addressed according to the CAPS curriculum?

14. (a) Do you think that your teachers have adequate information regarding malaria?

14. (b) If yes – how is this evident?

15. Do you consider the content of the Foundation Phase Life Skills curriculum to be sufficient to address the issue of malaria prevention and control?

16. (a) Are you aware of any collaboration or communication between role-players on malaria awareness, prevention and control, and the effects of malaria on…?

16. (b) If not – how would you suggest such collaboration is achieved?

17. Do you as manager share information with your teachers as to how they can assist their learners and each other in the event of malaria infections at school?

18. Do you as principals in the area share information about the effects of malaria on your schools and how these effects can be minimised?

19. (a) Are you aware of any other means by which information on malaria is distributed amongst children/teachers?

19. (b) If yes – how is the information distributed?

Foundation Phase Teachers: (Group Interviews)

Time of interview_____ Duration:_____

Date:_____

Place:_____

Interviewer:_____

Interviewee:_____ Pseudonym:_____

Position/Role: _____

Institution: _____

Male/Female_____

1. What do you know about the extent of malaria in
   - your area
   - your province or
   - the rest of the country?
2. What could be done to avoid malaria:
   - at home
   - at school?
3. Are you aware of the symptoms of malaria and how would you treat these symptoms?
4. What do you do if your learners display any of these symptoms?
5. What are the current interventions (if any) in terms of a person diagnosed with malaria at:
   - school
   - in the homes
   - in the community
6. Is malaria addressed in the curriculum in any way?
7. Do you consider the content of the Foundation Phase Life Skills curriculum to be sufficient to address the issue of malaria prevention and control?
8. If malaria is not addressed in the curriculum or if the content is deemed as insufficient, do you as an teacher embark on any initiative to inform the learners of malaria, its causes and consequences?

9. (a) Are you aware of any other means by which information on malaria is distributed amongst children/teachers?

9. (b) If yes – how is the information distributed?

10. (a) Are you aware of any collaboration or communication between role-players on malaria awareness, prevention and control, and the effects of malaria on…?

10. (b) If not – how would you suggest such collaboration is achieved?

11. (a) Do schools promote awareness of malaria prevention and control?

11. (b) If yes – how?

12. What strategy would you suggest to enhance and improve overall awareness of malaria prevention and control?

13. (a) How is health education addressed in the Foundation Phase classroom?

13. (b) How is health education addressed according to the CAPS curriculum?

13. (c) How do you ensure that learners understand the content of the CAPS curriculum?

14.(a) Do you know whether the learners are aware of malaria prevention practices?

14. (b) If yes – how is this evident?

15. Would you say that this knowledge is sufficient?

16. Are you aware of any deaths among your learners that were caused by malaria?

17. Are you aware of any illnesses suffered by your learners that could be related to malaria?

18. What are the typical types of illnesses suffered by your learners?

19. Can you list the common reasons for the absenteeism of your learners?

20. Do you have instances where learners are away from (absent) from school for long periods due to illness?

21. If there are learners who do suffer from the effects of malaria, or any other illnesses, how do you manage their school work or assist them to complete their tasks?

22. Do you as a group of Foundation Phase teachers share information as to how you can assist your learners and each other in the event of malaria infections at school?

District officials: Department of Education and Department of Health (Individual Interviews)

Time of interview_____ Duration:_____

Date:_____

Place:_____

Interviewer:_____

Interviewee:_____ Pseudonym:_____

Position/Role: _____

Institution: _____

Male/Female_____

1.(a) Are you aware of any current policies on the prevention and control of malaria in this Province?

1.(b) If yes – which policies/name them.

2.(a) Are you aware of any collaboration between role-players on malaria awareness, prevention and control?

2.(b) If not – how would you suggest such collaboration is achieved?

3. Do schools promote awareness of malaria prevention and control? (**DO ED**)

3.(b) If yes – how?

4. What strategy would you suggest to enhance and improve overall awareness of malaria prevention and control?

5. How do policies of this department address malaria education in the Foundation Phase?

6. What strategies (if any) are employed by this institution to promote the prevention and control of malaria through health education?

7. What do you consider to be

(a) the strengths, and
(b) the weaknesses

of health education, especially with regard to malaria prevention and control in Early Childhood Education in this province?

8. Describe how information in policies is disseminated to the community?

9.(a) How do you ensure general policy implementation in schools? (**DO ED**)

9.(b) How is policy implementation monitored?

9.(c) How do you ensure the implementation of the CAPS curriculum in the school? (**DO ED**)

10.(a) How is health education addressed in the Foundation Phase classroom? (**DO ED**)

10.(b) How is health education addressed according to the CAPS curriculum? (**DO ED**)

11.(a) Do you consider the content of the Foundation Phase Life Skills curriculum to be sufficient to address the issue of malaria prevention and control? (**DO ED**)

12. (a) Are you aware of any other means by which information on malaria is distributed amongst children/community members? Please name all possible sources you can think of.

12.(b) If yes – how is the information distributed?

12.(c) Do you consider these sources In (a) to be effective?

12.(d) If not - Can you suggest any other means of information distribution?

Nurses at the clinic and community workers (Individual interviews)

Time of interview_____ Duration:_____

Date:_____

Place:_____

Interviewer:_____

Interviewee:_____ Pseudonym:_____

Position/Role: _____

Institution: _____

Male/Female_____

1.(a) Are you aware of any current policies on the prevention and control of malaria in this Province?

1.(b) If yes – which policies/name them.

2.(a) you aware of any collaboration between role-players (such as yourself and the departments of health and education) on malaria awareness, prevention and control?

2.(b) If not – how would you suggest such collaboration is achieved?

3. What do you consider to be

(a) the strengths, and
(b) the weaknesses

of health education, especially with regard to malaria prevention and control in Early Childhood Education in this province?

4. Describe how information in policies is disseminated to the community?

5. How is policy implementation monitored?

6.(a) Are you aware of any other means by which information on malaria is distributed amongst children/community members?

6.(b) If yes – how is the information distributed?

7. How would you describe the

(a) attitude and
(b) knowledge

of the community towards the prevention and control of malaria?

8.(a) Where would you say the community get their information on malaria prevention? Please name all possible sources you can think of.

8.(b) Do you consider these sources to be effective?

8.(c) If not - Can you suggest any other means of information distribution?

9.(a) Do you know whether the learners are aware of malaria prevention practices?

9. (b) If yes – how is this evident?

9.(c) Would you say that this knowledge is sufficient?

10. How is malaria usually diagnosed in this village?

11. Do community members usually

(a) first come to the clinic or
(b) seek “other” treatment (such as traditional cures)

12. (a) Briefly describe the process from malaria diagnosis until the patient receives treatment.

12. (b) How effective would you say the process is?

13. How do cultural beliefs influence the seeking of medical attention in cases of malaria?

7.3 ANNEXURE C: Ethical Clearance, Faculty of Health Sciences

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.
- FWA 00002567, Approved dd 22 May 2002 and Expires 20 Oct 2016.
- IRB 0000 2235 IORG0001752 Approved dd 22/04/2014 and Expires 22/04/2017

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

23/07/2015

Endorsement Notice

Ethics Reference No.: 202/2015

Title: A situation analysis of health education for young children to promote the prevention and control of malaria in the Ha-Makuyu Village

Dear Miss Cnc ne Schubart

The **New Application** as supported by documents specified in your cover letter for your research received on the 21/04/2015, was approved, by the Faculty of Health Sciences Research Ethics Committee on the 22/07/2015.

Please note the following about your ethics approval:
- Please remember to use your protocol number (**202/2015**) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research

Ethics approval is subject to the following:
- The ethics approval is conditional on the receipt of 6 monthly written Progress Reports, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharMed.
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

012 354 1677 0866516047 deepika.bernard@up.ac.za http://www.healthethics.up.co.za
Private Bag X323, Arcadia, 0007 - 31 Bophelo Road, HW Snyman South Building, Level 2, Room 2.33, Gezina, Pretoria

7.4 ANNEXURE D: Permission to conduct research (DoE, Limpopo)

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

Enquiries: Dr. Makola MC, Tel No: 015 290 9448. E-mail: MakolaMC@edu.limpopo.gov.za

UNIVERSITY OF PRETORIA

FACULTY OF EDUCATION

EARLY CHILDHOOD EDUCATION DEPARTMENT

PRETORIA

0002

DR MG STEYN

RE: Request for permission to Conduct Research

1. The above bears reference.
2. The Department wishes to inform you that your request to conduct a research has been approved- **TOPIC: THE IMPACT OF MALARIA ON TEACHING AND LEARNING.**
3. The following conditions should be considered

   3.1 The research should not have any financial implications for Limpopo Department of Education.

   3.2 Arrangements should be made with both the Circuit Offices and the schools concerned.

   3.3 The conduct of research should not anyhow disrupt the academic programs at the schools.

   3.4 The research should not be conducted during the time of Examinations especially the forth term.

   3.5 During the study, the research ethics should be practiced, in particular the principle of voluntary participation (the people involved should be respected).

   3.6 Upon completion of research study, the researcher shall share the final product of the research with the Department.

4. Furthermore, you are expected to produce this letter at Schools/ Offices where you intend conducting your research as an evidence that you are permitted to conduct the research.

Page 1 of 2

Cnr. 113 Biccard & 24 Excelsior Street, POLOKWANE, 0700, Private Bag X9489, POLOKWANE, 0700
Tel: 015 290 7600, Fax: 015 297 6920/4220/4494

The heartland of southern Africa - development is about people!

7.5 ANNEXURE E: Permission to conduct research (DoH, Limpopo)

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Latif Shamila 015 2936210 Ref:4/2/2

Schubart O
University of Pretoria
Department of Early Childhood Education

Greetings,

RE: A situational analysis of health education for young children to promote the prevention and control of malaria in the Ha-Makuyu Village.

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
   - Research must be loaded on the NHRD site (http://nhrd.hst.org.za) by the researcher.
   - Further arrangement should be made with the targeted institutions.
   - In the course of your study there should be no action that disrupts the services.
   - After completion of the study, a copy should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   - The above approval is valid for a 3 year period.
   - If the proposal has been amended, a new approval should be sought from the Department of Health.

Your cooperation will be highly appreciated.

Head of Department

06/11/2015
Date

18 College Street, Polokwane, 0700. Private Bag x9302, POLOKWANE, 0700
Tel: (015) 293 6000, Fax (015) 293 6211/20 Website: http\www.limpopo.gov.za

The heartland of Southern Africa – *development is about people*

7.6 ANNEXURE F: Permission to conduct research, (DoH, Vhembe District)

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH: VHEMBE DISTRICT

Enquiries: Makhwanya T E

Contact details: 084 690 0606 or Makhwanyate@gmail.com or fax no 015 962 2373

Date: 6th March 2016.

To: Sub-district Manager: PHC

Mutale sub-district

RE: APPROVAL TO CONDUCT THE STUDY: ONDINE SCHUBART.

This is to confirm that the above-mentioned student has been accepted by the District to conduct the research study *(A situational analysis of health education for young children to promote the prevention and control of malaria in the Ha-Makuya village)* as approved by the Province (See attached approval).

Your PHC facilities are hereby requested to give her the necessary assistance and or support as the study is likely to benefit profoundly the District in terms of service delivery.

Thanking you in advance for your assistance and or support.

..... 08/03/2016

ACTING-DISTRICT EXECUTIVE MANAGER DATE