

THE EFFECTS OF POOR WATER, SANITATION AND HYGIENE IN SECONDARY SCHOOLS OF NCHELENGE DISTRICT, LUAPULA PROVINCE

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ABSTRACT

Poor water and sanitation conditions have created high incidences of related diseases among the children attending rural schools in globally more especially in rural schools. This is detrimental to learning and health status as a whole. Schools, particularly those in rural areas, often completely lack drinking-water and sanitation and hand washing facilities; alternatively, where such facilities do exist, they are often inadequate in both quality and quantity. Schools with poor water, sanitation and hygiene conditions, and intense levels of person-to-person contact, are high-risk environments for children and staff, and exacerbate children's particular susceptibility to environmental health hazards (WHO, 2009). A focus on school sanitation affirms the fact that children have a right to basic facilities such as school toilets, safe drinking water, clean surroundings and information on hygiene. If these conditions are created, children come to school, enjoy learning, learn better and take concepts and practices on sanitation and hygiene back to their families, especially siblings. In other words, children become the agents of change in the home, in the community and as future parents, and investment in education is more productive

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1. CHAPTER ONE

1.0 Introduction and background

Poor water and sanitation conditions have created high incidences of related diseases among the children attending rural schools globally more especially in rural schools. This is detrimental to learning and health status as a whole. Schools, particularly those in rural areas, often completely lack drinking-water, sanitation and hand washing facilities; alternatively, where such facilities do exist they are often inadequate in both quality and quantity. Schools with poor water, sanitation and hygiene conditions, and intense levels of person-to-person contact, are high-risk environments for children and staff, and exacerbate children's particular susceptibility to environmental health hazards (WHO, 2009). A focus on school sanitation affirms the fact that children have a right to basic facilities such as school toilets, safe drinking water, clean surroundings and information on hygiene. If these conditions are created, children come to school, enjoy learning, learn better and take concepts and practices on sanitation and hygiene back to their families, especially siblings. In other words, children become the agents of change in the home, in the community and as future parents, and investment in education is more productive.

Children's ability to learn may be affected by inadequate water, sanitation and hygiene conditions in several ways in Nchelenge District. These include helminthic infections (which affect millions of school-aged children), long-term exposure to chemical contaminants in water for instance Lead and Arsenic, diarrheal diseases and malaria infections, all of which force many schoolchildren to be absent from school. Poor environmental conditions in the classroom can also make both teaching and learning very difficult (WHO, 2004c). Therefore, girls and boys are likely to be affected in different ways by inadequate water, sanitation and hygiene conditions in secondary schools in Nchelenge District, and this may contribute to unequal learning opportunities. Sometimes, girls and female teachers are more affected than boys because the lack of sanitary facilities means that they cannot attend school during menstruation. This report looked at the effects of poor water sanitation in four boarding schools in Nchelenge District of Luapula province of Zambia.

1.2 Statement of the problem

Poor water and sanitation in schools has become a challenge to both girls and boys in learning settings which has contributed to the poor performance in children more especially girls. In order to test the validity of such scholarly statement, it is therefore imperative to find out the impacts of poor water and sanitation on girls and boys in selected boarding schools in Nchelenge District of Luapula Province.

There is a positive correlation between education, quality of life, and good health, social and economic activity. Studies have shown that 50% of child morbidity in boarding schools of Zambia is due to poor water and sanitation, children being more susceptible (UNICEF/SIDA, 2002).

According to the Burden of Disease Study (1995), 8.4% of the quality education and performance of both girls and boys in boarding schools has been affected because of diarrhea related diseases due to poor sanitation. According to UNICEF (2002), it has been observed that over 1,200 school children are affected in attaining quality education because of poor water sanitation conditions in most rural boarding schools in Zambia.

1.3 Aim

The main aim of this research was to find out the effects of Poor Water, Sanitation and Hygiene on girls and boys in selected boarding schools in Nchelenge District of Luapula Province.

1.4 Objectives

1.4.1 General objective

The main aim of this research was to find out the effects of poor water and sanitation on girls and boys in selected boarding schools in Nchelenge District of Luapula Province.

1.4.2 Specific objectives

1. To investigate the effects of poor water and sanitation on girls and boys in selected boarding schools.

2. To find out the effects of poor sanitation on both female and male teachers in selected boarding schools.
3. To ascertain the mitigation measures put in place to address the effects associated with poor water sanitation in boarding schools.

1.4.3 Research questions

The research study was designed to answer the following questions.

1.5 General research question

Which effects are associated with poor water sanitation in boarding schools in Nchelenge District of Luapula Province?

1.5.1 Specific research questions

1. What are the effects of poor water and sanitation to girls and boys in boarding school?
2. Which mitigation measures have been put in place to address the effects of poor water and sanitation to girls and boys in boarding schools?
3. Which activities are being conducted to address the effects associated with poor water sanitation in schools.

1.6 Scope of the research study

The study was carried out in four selected boarding schools, namely, Kashita Secondary, Mutono Secondary Mweru Secondary and Munsa Secondary schools in Nchelenge District of Luapula Province. Issues that were covered bordered on the effects of poor water and sanitation on girls and boys in selected boarding schools in Nchelenge District. Current situation of sanitation services delivery, contributions of communities and the District Assembly towards ensuring enhanced sanitation services delivery, hygienic practices in boarding schools and communities, policies and strategies of donors in sanitation services delivery. The objectives of this study set the framework/boundaries of the scope.

1.7 Significant of the study

This research study was very important from social, political, economic and environmental aspects in the sense that it could form the basis upon which more effective interventions or mitigation measures on which to address the problems of poor water and sanitation to school going children in institutions (boarding schools) of Zambia can be effectively implemented to reduce on the waterborne related diseases.

CHAPTER TWO:

2.0 Literature review

Diseases related to inadequate water, sanitation and hygiene are a huge burden in developing countries. It is estimated that 88% of diarrheal disease is caused by unsafe water supply, and inadequate sanitation and hygiene (WHO, 2004c). Many schools serve communities that have a high prevalence of diseases related to inadequate water supply, sanitation and hygiene, and where child malnutrition and other underlying health problems are common. Schools, particularly those in rural areas, often completely lack drinking-water and sanitation and hand washing facilities; alternatively, where such facilities do exist they are often inadequate in both quality and quantity. Schools with poor water, sanitation and hygiene conditions, and intense levels of person-to-person contact, are high-risk environments for children and staff, and exacerbate children's particular susceptibility to environmental health hazards.

Children's ability to learn may be affected by inadequate water, sanitation and hygiene conditions in several ways. These include helminthic infections (which affect hundreds of millions of school-age children), long-term exposure to chemical contaminants in water, Lead and arsenic, diarrheal diseases and malaria infections, all of which force many school children to be absent from school. However, poor environmental conditions in the classroom can also make both teaching and learning very difficult. Girls and boys are likely to be affected in different ways by inadequate water, sanitation and hygiene conditions in schools, and this may contribute to unequal learning opportunities. Sometimes, girls and female teachers are more affected than boys because the lack of sanitary facilities means that they cannot attend school during menstruation (Franceys et al. 1992).

The international policy environment increasingly reflects these issues. Providing adequate levels of water supply, sanitation and hygiene in schools is of direct relevance to the United Nations (UN) Millennium Development Goals (MDGs) of achieving universal primary education, promoting gender equality and reducing child mortality. It is also supportive of other goals, especially those on major diseases and infant mortality. At the same time, the UN Millennium Project and the UN Secretary General have highlighted the importance of rapidly addressing “quick wins”; that is, identifying specifically provision of services to schools and health-care facilities (UNICEF, 1998). Guidelines on water, sanitation and hygiene in schools are widely available, but additional guidance and standards for low-cost settings are needed. The development and implementation of national policies, guidelines for safe practices, training and promotion of effective messages in a context of healthy schools will decrease the toll taken by inadequate water, sanitation and hygiene.

In most part of the world, boarding schools cater for children who, for various reasons, are unable to return home each day. In boarding schools, all meals, sleeping accommodation and washing facilities are provided. It is therefore of critical importance that water, sanitation and hygiene enabling facilities are adequate. Risks of transmission of communicable disease are raised because of the communal eating, sleeping and sanitation and hygiene arrangements in boarding schools. Nevertheless, it is possible to provide adequate water, sanitation and hygiene conditions for all children. But due to an ineffective managerial and administrations in most rural schools contributed to poor water, sanitation and hygiene and that is also because of lack of adequate financial resources to improve and maintaining the sanitary facilities in schools (Zomerplaag and Mooijman, 2005).

Poor water, sanitation and hygiene affect much school going children’s ability to learn in several ways. Firstly, helminthic infections, which affect hundreds of millions of school-age children, can impair children’s physical development and reduce their cognitive development, through pain and discomfort, competition for nutrients, anemia, and damage to tissues and organs. Long-term exposure to chemical contaminants in water for example lead and arsenic may impair learning ability. Diarrheal diseases, malaria and helminthic infections force many school children to be absent from school. Poor environmental conditions in the classroom can also make both teaching and learning very difficult. The effect of disease in teachers impairing performance and increasing absenteeism also has a direct impact

on learning, and teachers' work is made harder by the learning difficulties faced by schoolchildren (UNICEF, 1998).

In several boarding schools which lack the adequate water, sanitation and hygiene, there are higher chances of gender disabilities to girls and boys, including those with disabilities, are likely to be affected in different ways by inadequate water, sanitation and hygiene conditions in schools, and this may contribute to unequal learning opportunities. For example, lack of adequate, separate private and secure toilets and washing facilities may discourage parents from sending girls to school. In addition, lack of adequate facilities for menstrual hygiene can contribute to girls missing days at school; this can even lead girls to drop out of education altogether at puberty. Toilets that are inaccessible often mean that a disabled child does not eat or drink all day to avoid needing the toilet, leading to health problems and eventually to their dropping out of school altogether (Snel, et al. 2002).

According to Schouten and Moriarty, (2003), in wider communities, poor water, sanitation and hygiene affects the wellbeing of people in the sense that, communities in which school children are exposed to disease risk because of inadequate water supply, sanitation and hygiene at school are themselves more at risk. Families bear the burden of their children's illness due to bad conditions at school. Unlike those children who have adequate water, sanitation and hygiene conditions at school are more able to integrate hygiene education into their daily lives, and can be effective messengers and agents for change in their families and the wider community.

The provision of sanitary facilities like improved toilet facilities and hygiene improves health status of pupils/students and also encourages girls to attend school. Accordingly, the School Sanitation and Hygiene Education (SSHE) campaign, a joint project of UNICEF and the IRC International Water and Sanitation Centre, the Water Supply and Sanitation Collaborative Council (WSSCC) and others, aims to provide water and sanitary facilities in schools to improve health of all pupils and encourage girls to

attend school. Research and surveys suggest that separate facilities need to be provided for girls and boys, if girls are not to be discouraged from attending school. The project began in February 2000 in Burkina Faso, Colombia, Nepal, Nicaragua, Viet Nam and Zambia. With an emphasis on local participation, SSHE provides low-cost teaching aids, inexpensive, community developed technology and life-skills hygiene education to primary schools. In Bangladesh, a school sanitation project with separate facilities for boys and girls boosted girls' school attendance on average by 11 % per year from 1992 to 1999 (UNICEF, 2003:10).

The education sector can positively influence current children and future parents. Schools need to provide hygienic and healthy learning environments to protect pupils enhance learning and set examples of best practice for the home. Child-to-Child approaches have been proven successful in Nepal through school-based sanitation and hygiene programme so that hygiene and sanitation programmes need to be mainstreamed in the education sector programmes. The focus should be given on child, gender and differently able - friendly WASH facilities in each all the schools including the provisions for menstrual hygiene (UNICEF, 2003: 12).

However the situation and role of the 15 schools in the northern region of Nchelenge District of Luapula Province for example is very poor. Few of the schools have sanitation and even fewer have safe water. Children fetch water from ponds or streams or carry it from home. There are usually not enough latrines sometimes there are none. This means long queues during break and lunch hours. Due to improper lining and the soil structure, some latrines have collapsed year by year. The infrastructure in most of the schools is in serious need of repair, with collapsing or non-existent roofs, collapsing walls and inadequate classroom space. As a rule, UNESCO has integrated health and hygiene training into all its projects, both in schools and communities. Poor water and sanitation conditions around the rural schools have led to a high burden of water-borne diseases. The students' health suffers and so does their ability to learn. SSHE, through the formation of school health clubs (SHCs), can make a difference. SSHE hopes to reduce health problems related to water and sanitation in and around the school, while SHCs are formed to encourage positive health and hygiene practices (UNESCO, 2002).

Moreover, water-related sicknesses in schools of developing countries have a lot of impacts on the number of school going children more especially girls. It has been estimated 28,000 children who are in boarding schools have stopped school because of poor water, sanitation and hygiene which results to diarrhea related diseases. The challenges which parents whose children have dropped out from school is because they cannot afford to take their children to well-equipped hospitals hence, Sanitation remains huge and continues to grow rapidly. In urban areas of Nepal an estimated 61.4% of boarding schools and houses have latrines; in rural areas the number falls to 17% of schools and households (Nepal State of Sanitation Report, 1999/2000). The problem is made worse by poverty, lack of resources and inadequate education. Most schools in rural villages lack even a proper physical infrastructure. The building of proper sanitation facilities is not on any priority lists – the overwhelming need is for roofs that do not leak; providing these would enable classes to stay open even during the rainy season.

Due to gender discrimination, many families send their boy children to private schools, where the educational quality and facilities are good but costly. In these schools the teaching language is English. The girls are sent to the government schools where, in the urban government schools, there are more girl students than boys. Because many schools lack toilets, or have toilets for boys but not for girls who are menstruating cannot come to school for both religious and practical reasons. They have nowhere private to change and clean themselves, in addition, in this culture, they are not allowed to touch others for a four-day period. The notion of “being untouchable” during the four days of menstruation is common in higher caste groups such as kabuta and mukeya. Mostly the girls from these caste groups drop out of school after they reach puberty. The parents teach the girls to be untouchable during this period, especially with boys. With latrines providing privacy and the ability to keep really clean, the situation has slowly been improving, at least in the schools where there are proper sanitation facilities and an awareness programme (Jones and Reed, 2005).

CHAPTER THREE

3.0 Research methodology

Methodology is the method or organizing principle that underlining a particular art, science or other areas of study. Therefore, the methodology of how the study was conducted is outlined in this chapter. That is, the research design, target population, sample design, the techniques that was used to collect data. In addition, methods on how data was analyzed, primary data, secondary data and ethical considerations is indicated.

3.1 Research design

The research study used qualitative research design particularly a case study in order to gain a deeper understanding of the question under study. Case study is the study that involves in-depth analysis of one unit of analysis (Yin, 1994). This unit of analysis could be an individual, group, community or society. That is the unit of analysis could be taken either as an independent or dependent variable depending on the nature of the problem. However, the problem in terms of context of justification as far as the case study is concerned is that, problem of verification of findings are based on case study since findings cannot be generalized. This is because the case study tends not to be representative but the researcher can only have proof by examples and not by evidence. The advantage is in terms of context of discovery. Discoveries lead to the richness and the meaningfulness of insights good information. It also leads to thorough understanding of the studies or the phenomena or events (Yin, 1994).

3.2 Target population

A target population is the set of well-defined elements that the research focuses upon and to which the results obtained by testing the sample should be generalized. Therefore, this research study, the target population was four selected boarding schools in Nchelenge District of Luapula Province namely, kashita, mutono, munsa and mweru secondary schools. The target population was 15 pupils at each school making 60pupils from different selected boarding schools, 5 parents from each boarding school

making the total number of 20 parents. 5 female teachers and 5 male teachers from the selected four boarding schools making 40 teachers and the grand total number of target of population is 120.

3.3 Sampling design and size

The sampling design of this research was non-probability sampling and in particular heterogeneous purposive sampling. This is the sampling where the subjects are selected subjectively to represent as accurately as possible the characteristics of the population of interest (Bless and Achola, 1990). It is judgmental sampling because it will depend on the researcher as to who should be included in the sample. The research study was conducted in four selected boarding schools in Nchelenge District of Luapula Province. The sample size was 120 people which include teachers, pupils and parents. This is because of lessening on the expenses of transport fare, time, finances, distance and accommodation as it will near the researcher's home place.

3.4 Data collection tools

In this research study, interview guide, observation and questionnaires was used to collect data from the respondents in order to find out the effects of poor water and sanitation in selected boarding schools in Nchelenge District of Luapula Province. The researcher visited each selected boarding school in Nchelenge District where observation, direct interviews was conducted and questionnaires distributed to respondents. The oral interviews were conducted by the researcher with the help of structured interview guide. This was done with the consideration of the educational background of people in Nchelenge District. Interview guide and questionnaires were used to generate primary data to obtain genuine and reliable data.

3.5 Data analysis

Data was analyzed qualitatively and quantitatively using frequencies, percentages and statistical method to analyze data. This was done by systematic arrangement of notes and figures from the field. After primary data collection, analysis followed. The check list information checked for uniformity, accuracy and completeness and other discussion from the in-depth interviews was also cleaned. The data analysis in this study was done manually.

The researcher started by looking at the data collected using check list key informant. This involved coding each question's response and after this, some descriptive measure done. Finally, the researcher analyzed the data collected through the in depth interviews. This was summarized and put into broader categories and the response then written in narrative form.

3.6 Primary data

This study depends on the primary information obtained from the field where interviews were conducted. Primary data is data that has been collected personally by the researcher from the field and it is not yet been interpreted by any person. It also includes data which the researcher generates himself or herself without bias from a third party, hence it is raw and original data. The interview guide, questionnaires and observations will be used as major tools to collect primary data from the field. In this study, primary data was obtained through in-depth interviews and semi-structured interview guide. Primary data is important as empirical evidence that the researcher collects. It is evidence which has not been encountered by any other researcher, since data is derived from the people being interviewed. Therefore, primary data bridges the gaps or weaknesses of the secondary data and gives the actual answer to objectives of the study. The information from the primary data contributes to the theory, practice and policy (Cohen and Manion, 1994).

3.7 Secondary data

Secondary data is the collected data from published materials such as text books, journals, reports of individuals and organizations, internet, legal documents, and other information necessary for the study. Secondary data is important because they contain interpretations, biases and personal views of other writers. Secondary data is important as it provides a starting point to the research. It is also important for comparison between what the researcher found in the field and what is published, because it makes the researcher avoid relying on one source as such a source could be biased. Also, secondary data assists the researcher to find out if there is information from already done work that he or she can use in the study (Cohen and Manion, 1994).

3.8 Ethical considerations

Written consent was obtained from each participant before the commencement of data collection as they have the right to knowledge of the purpose of the research before they participated. Therefore, Participants were assured about the protection of the information they gave. Participants were assured about the confidentiality of information they gave and also not to be asked their names when interviewed and answering the questionnaires. Additionally, participants were also assured that the findings of the study were purely for academic purposes.

CHAPTER 4

4.1 STATEMENT OF HYPOTHESES

- The lower the year of study or grade the more likely a pupil is to have a negative effect of poor water and sanitation.
- Male pupils are less likely to have more negative effects of poor water and sanitation than female pupils.
- Young pupils are more likely to have more negative effects of poor water and sanitation.

4.2 METHODOLOGY

VARIABLES	TYPE OF VARIABLES	SCALE OF MEASUREMENT
Age	Independent	Ratio
Sex	Independent	Nominal
School	Independent	Nominal
Year of study	Independent	Ordinal

4.3 MEASUREMENT

No.	Variable	Conceptual Definition	Operational Definition
1	Age	-the number of years one has lived on earth from the time of birth.	What was your age on your last birthday?
2	Sex	-Gender -the biological state of being male or female.	What is your sex?
3	Year of study	A year of study is the grade in which a pupil is in.	What is your year of study?
4	school	The school is a school were the student belongs.	Which school do you belong to?

CHAPTER 4.4: RESULTS/FINDINGS

SECONDAR Y SCHOOLS.	NUMBE R OF PUPILS	PERMANENT TOILETS(VIP)	TEMPORA L TOILETS	WATER BORNE TOILET S	BORE HOLE S	PIPED WATE R	HAND WASHIN G UTENSIL S
MUTONO	850	6	0	0	1	0	1
MUNSA	1,028	4	2	0	1	0	0
MWERU	587	3	3	0	1	0	2
KASHITA	650	6	4	0	1	0	0

From the above findings it shows that all the visited schools did not have the correct number of toilets as compared to the number of pupils. It is estimated that 25 pupils in schools are equivalent to one toilet according to the public health act, plus a urinal for boys and according to the findings, no school was able to meet the standard.

The recommendation was that the school authorities with the DEBS office find resources or partner with NGOs and build more permanent latrines in all schools or alternatively put septic tanks and install submissive pumps for running water in all the schools.

Only 2 schools had hand washing facilities which was also not adequate. The recommendation was that all the schools put hand washing facilities in the same ratios as toilets. At Munsa secondary school, pupils were much relying on the nearby natural water spring for both washing and drinking.

All the schools had no running water making it difficult to have adequate water. If schools can buy pumps and tanks then it can eliminate the issue of inadequate water supply in all the schools.

Lack of adequate and nothing in some schools hand washing facilities was making most schools to experience diarrhoeal diseases.

According to the above findings hypothesis testing was done.

4.5 SEX COMPOSITION OF RESPONDENTS.

The sex composition of the 150 respondents. Out of these, there were 100 Females representing 66% and 50 males representing 34% of the total respondents.

4.6 Hypothesis testing

- **The lower the year of study or grade the more likely a pupil is to have a negative effect of poor water and sanitation.**

According to the test of hypothesis, there is significant relationship between negative effects of poor water, sanitation and hygiene and the year of study or the grade of the pupil, this is

because out of pupils interviewed, more lower grades pupils had more episodes of diarrheal diseases than upper grades pupils. i.e. 12 out of 60 for junior grades and 10 out of 60 for upper grades.

- **Male pupils are less likely to have more negative effects of poor water and sanitation than female pupils.**

According to our expectation, in accordance with the hypothesis, males are less likely to have more negative effects of poor water, sanitation and hygiene than female pupils. The hypothesis shows that there is significant relationship between more negative effects of poor water, sanitation and hygiene and the sex of the respondent. i.e. 14 out of 60 were female pupils and 8 out of 60 were male pupils.

- **Young pupils are more likely to have more negative effects of poor water and sanitation.**

The hypothesis testing shows that there is a positive correlation between effects of poor water and sanitation and age of respondents. After empirical review of the research, it was discovered that older pupils have less negative effects of poor water and sanitation than young pupils in both sexes.

CONCLUSION

In conclusion pupils and teachers in boarding schools in Nchelenge district of Luapula province are negatively affected by the poor state of water, sanitation and hygiene. Teachers especially females find it difficult to provide their service to the desired level due to fewer and poor water and sanitation facilities, which leads to prolonged off days during their monthly periods for instance. This applies to female pupils as well as they miss class for many days during menstruation, leading to unequal learning opportunities between male pupils and female pupils.

Out breaks of diarrheal diseases especially dysentery and cholera is another serious negative effect of poor water, sanitation and hygiene to both male and female pupils in boarding schools. Disease burden not only affect pupils but also parents as they spend most of their time nursing the sick pupil especially when they are admitted. Poor sanitation facilities also leads to constipation as pupils fail to answer the call of nature due to psychological effects. Pupils sometimes fail to eat all to avoid going to poor toilets, this may lead to malnutrition.

4.7 RECOMMEDATIONS

1. School authority should ensure that, they construct adequate ablution blocks to all the boarding schools in Nchelenge, i.e, 25 pupils per toilet for female pupils and 50 pupils per toilet for male pupils and a urinal.
2. School authorities should ensure adequate water supply to all the ablution blocks and that the water for drinking is treated or chlorinated all the time.
3. All the schools to procure at least 10 hand washing facilities or according to the number of toilets.
4. All schools to be trained in PHAST activities and have these committees in place in all the schools
5. WASHE committees to be formed in all schools.

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