**EXAMINING SCHOOL-BASED HYGIENE FACILITIES, A QUANTITATIVE ASSESSMENT IN SECONDARY SCHOOLS IN NAMA SUBCOUNTY, MUKONO DISTRICT, UGANDA.**

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**Abstract.**

**Background:** The crucial role of adequate water, sanitation and hygiene (WASH) facilities in influencing children’s handwashing behaviour is widely reported. Report from UNICEF indicates a dearth of adequate data on WASH facilities in schools, especially in the developing world. This study sought to contribute to building the evidence-base on school hygiene facilities in secondary schools in Uganda. The study further explored for possible associations and differences between key variables within the context of school water, sanitation and hygiene.

**Methods:** Data was collected from 15 secondary schools using an observational checklist. Methods of data analysis included a Scalogram model, Fisher’s exact test, and a Student’s t- test.

**Results:** Results of the study showed a facility deficiency in many schools: 27% of schools had students washing their hands in a shared receptacle (bowl), 13% had students using towel to dry hands after handwashing, and 73% of schools had a functional water facility. Furthermore, results of a proportion test indicated that 91% of schools which had functional water facilities also had functional handwashing stations.

In addition, 91% of schools which had financial provisions for water supply also had functional handwashing stations.

**Conclusion:** I conclude that it is essential to have a financial provision for water supply in schools as this can potentially influence the existence of a handwashing station in a school. An intervention by government, educational authorities and civil society organisations towards enabling schools in low resource areas to have a sustainable budgetary allocation for WASH facilities would be timely.

**Keywords:** School, Water, Hygiene, Functional, Facilities

**TABLE OF CONTENTS. PAGE.**

Background…………………………………………………………………… 2

Hypotheses…………………………………………………………………… 3

Methodology……………………………………………………………………… 3

Data collection and tools………………………………………………………… 3

Ethics……………………………………………………………………………… 4

Result analysis…………………………………………………………………… 5

Discussion……………………………………………………………………… 6

Limitations……………………………………………………………………… 9

Conclusion……………………………………………………………………… 9

**Introduction.**

**Background.**

Infectious diseases continue to claim many lives especially among children. Though the developed WASH in schools deserves increased attention both at the global and national levels. A laudable expression in WAS world is not exempted from this phenomenon, the developing world is often hit the hardest. For example, diarrhoeal diseases have been listed as one of four leading causes of early death in all sub-Saharan African countries. In the year 2018, approximately 1300 children lost their lives each day as a result of diarrhea ( UNICEF). Preventing the spread of infectious agents in schools is a good way towards minimizing the infectious disease burden among children. Provision of adequate water, sanitation and hygiene (WASH) facilities in schools is crucial in ensuring the adoption and maintenance of safe sanitation and hygiene practices among school children. The available evidence suggests that schools with better hygienic conditions tend to have less problems with disease causing organisms. In the light of this, WASH in schools deserves increased attention both at the global and national levels. A laudable expression in the UN Sustainable Development Goals (SDGs) is the recognition of WASH in Schools (WinS) in Goals 4 and 6. However, such global expressions ought to be translated into national and local policies and actions in order to improve WinS substantially.

The crucial role of adequate WASH facilities towards influencing children’s handwashing behaviour is widely known. A functional handwashing station in a school makes it possible for children to adopt the practice of handwashing with soap (HWWS). In spite of this importance, national monitoring systems for WASH which are intended to report on the availability and state of handwashing facilities in schools is generally weak especially in developing countries. Few developing countries have reliable data on hygiene facilities in schools, of which Uganda is no exception. According to UNICEF, only about half of its programme countries are able to report on WASH facilities in schools. The dearth of reliable data on the functionality of WASH facilities in schools is worrisome, as such data is required for good programme design and management.

There is a paucity of studies examining hand hygiene facilities in African schools. However, no study was identified to have quantitatively explored the associations or variance between a functional water facility, financial provision for water supply, and existence of a handwashing station. The present study sought to employ a more robust quantitative approach to generate evidence on the existence and functionality of hygiene facilities within a representative sample of secondary schools in a sub county in Mukono district.

**Research Objectives.**

With regards to the above main topic, the study is to;

* Assess the accessibility and source of water point.
* Assess the existence of handwashing stations.
* Assess the functionality and accessibility to the toilet facility.

The key research questions for this study were the following;

* Are there environmental conditions in place for effective WASH ( i.e adequate and clean latrines, handwashing facilities with soap, post-defecation materials)?
* Are there enabling conditions in place for effective WASH (i.e budget, roles and adequate water)?

**Hypotheses.**

Precisely, we sought to test the following null hypotheses:

1. Ho: With regards to the existence of a functional handwashing station, the proportion of schools having a financial provision for water supply will not differ from the proportion of schools lacking a financial provision for water supply.
2. Ho: With regards to the existence of a functional handwashing station, the proportion of schools having a functional water facility will not differ from the proportion of schools lacking a functional water facility.

**Methodology.**

# Approach and design

The methodological approach adopted for the study was quantitative. A study seeking to objectively assess the existence, proportions and relationships between existing facilities is better approached from a positivist perspective, and hence the choice of a quantitative methodology. A cross-sectional design was employed for this assessment, and so study variables were assessed at only one point in time.

# Study population and sample size

The study population was made up of all secondary schools within Nama sub county. In all, there were 15 secondary schools. The list of schools was obtained from the district education office Mukono district.

# Sampling technique

In a bid to ensure that each school had an equal chance of being a part of the study, and in a manner that enhances the external validity of study results, a stratified random sampling technique was employed. In line with the above technique, a proportionate stratification approach was used. This approach ensured that the sample size was proportional to the population size of under study. Table 1 shows the estimated number of participants from each school.

**Description of data collection procedures and tools.**

Data was collected from October 5 to October 31, 2019, spanning a period of one calendar month. A checklist adapted from UNICEF and Moore et al. aided the environmental audit of schools in order to obtain first hand data on existing facilities. A decision on which facilities to target was guided by a WASH in schools monitoring package developed by UNICEF. The observation tool was pretested in Forest Hill college which is contiguous to the geographic scope of this study (student enrolment, n = 478), and was subsequently fine-tuned. For instance, after the pretest it

became necessary to include an item that enabled the observation of a functional toilet facility within schools. This was essential due to the complementarity of the concepts of hygiene and sanitation. Where required, clarifications on facilities were sought from the head teacher or an authorized representative of the school. The checklist makes use of dichotomous questions and assesses the school environment based on predetermined parameters, including: accessibility and source of water point, existence of handwashing stations, functionality of toilet facility, and accessibility to the toilet facility.

**Table 1.**

|  |  |  |  |
| --- | --- | --- | --- |
| Serial no. | School | Population size. | Estimated number of students required. |
| 1 | Forest hill college | 478 | 10 |
| 2 | Mbalala secondary school | 391 | 8 |
| 3 | St. peters SS namawojjolo | 137 | 3 |
| 4 | Destiny high school | 43 | 1 |
| 5 | Seeta high scool, mukono | 1076 | 22 |
| 6 | St. john’s SS | 231 | 5 |
| 7 | Mama ruth high school | 97 | 2 |
| 8 | Namataba SS | 301 | 6 |
| 9 | Goodmark HS | 293 | 6 |
| 10 | Green hill academy | 171 | 3 |
| 11 | Mbalala parents HS | 235 | 5 |
| 12 | Excel HS | 303 | 6 |
| 13 | St. Andrew SS | 381 | 8 |
| 14 | St. Luke academy | 192 | 4 |
| 15 | Mbalala Islamic school | 421 | 8 |
| Total | 15 | 4750 | 97 |

Source: developed based on a list obtained from district education office, Mukono (2019).

Descriptive statistical analysis was used in describing the existing facilities for handwashing in schools. For profiling the existing WASH facilities in participating schools, a scalogram model was used. In exploring for possible relationships between key variables, and differences in proportions of variables, statistical tests used were the Student’s t-test, Fisher’s exact test, and a two-sample proportion test. Data was analyzed using STATA version 14.0 (STATA Corp., College Station, Texas).

# **Ethical considerations.**

The research protocol was reviewed and subsequently granted clearance by Africa institute for project management studies. In addition, an approval to conduct the research was obtained from the district education officer, Mukono in conjunction with the district school inspector, the person in charge with inspection of all the basic schools within the study area.

**Results.**

Characteristics of schools, and distribution of facilities Observations of hygiene facilities occurred in all 15 schools. All participating schools were both public and private, and none was a single-sex school. The mean student enrolment was 317. The minimum student enrolment was 43 while the maximum was 1076. Table 2 presents summary statistics on the proportions of schools with specific facilities.

**Table 2.**

|  |  |  |
| --- | --- | --- |
| Item | Number of schools. | Percentage |
| Functional water point (facility) | 11 | 73 |
| Functional water reservoir | 5 | 33 |
| Soap | 1 | 7 |
| Functional handwashing station. | 10 | 67 |
| Functional toilet facility | 15 | 100 |
| Receptacle for waste water | 1 | 7 |
| Towel for hand drying | 2 | 13 |
| Shared/communal HW receptacle | 4 | 27 |
| Financial provision for handwashing facilities. | | |
| Financial provisional for facilities. | 11 | 73 |
| Source of funds | | |
| Capitation grant | 3 | 27 |
| Internally generated | 8 | 73 |

Source; field survey, 2019.

Toilet was the most common item observed in participating schools. All the participating schools (100%) had toilet available for use. Seventy three (73%) of schools had a functional water facility within its compound. Most of these facilities were stand-pipe (in 83% of schools), and 17% had boreholes.

Of the 15 participating schools, 10 (67%) had a functional handwashing station. Only 19% of schools had a handwashing facility attached to a toilet facility. Also, 23% of schools had a separate handwashing station for teachers. Also, 27% of schools had students washing their hands in a shared receptacle (bowl), 13% had students using a single cotton towel to dry hands after handwashing.

With regards to functional toilet facilities, 56% had this within the school compound. The types of toilet facility observed were the WC (6%), VIP (61%) and the Simple Pit Latrine (33%). The mean number of cubicles within a toilet facility was 4.9 (SD = 2.6). All schools had a separate section of the toilet facility for males and females. Also, 75% of schools had a separate section designated for teachers.

A financial provision for running handwashing stations reportedly existed in 73% of schools. Two main streams of revenue for sustaining a WinS were identified. These were the “capitation grant” from central government, and the internally generated funds (IGF). Most schools (73%) depend largely on the IGF for maintaining WASH facilities. Inflows to the IGF were identified to be from the sporadic donations from the Parents and Teachers Association (PTA), as well as the weekly fundraising sessions held during religious activities in schools. With regards to the adequacy of funds for maintaining WASH facilities, all schools (n = 11) described their financial resources as inadequate.

# A profile of facilities in schools

The observed handwashing (HW) and related facilities in participating schools are profiled with the aid of a scalogram model presented as Table 3. With reference to Table 3, columns 1 and 2 present a list of all sampled schools with their respective student enrolment figures. The second row presents the facilities assessed in this study. Corresponding to the facilities are codes indicating whether or not a particular facility exists in a particular school. Thus, code “1” means a facility exist, while code “0” means otherwise.

**Discussion.**

# Distribution of facilities in schools

The study has shown that all schools had toilets available to students (100%). Few schools had a functional water receptacle for waste water (7%). Similarly, few schools had towel for drying hands after washing (13%), which leaves much to be desired, considering the fact that 21% of schools in the developing world have handwashing facilities. Furthermore, a large number of students wash their hands in a shared receptacle and also dry their hands with a common towel. More so, only 67% of the number of schools have a functional handwashing facility and only 7% of the schools had soap available to students to use. In such a situation, students could potentially resort to using papers, leaves to clean their hands and eating materials. In this study, a simple pit latrine is identified to be in 33% of the schools. This condition obviously raises concern since a pit latrine is an unimproved toilet type, and hence not recommended for a school setting.

**Table 3.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A scalogram model on schools and functional facilities. | | | | | | | | | |
| Existing functional facilities. | | | | | | | | | |
| School | Enrollment(Mean=317) | Water point | HW point | Water reservoir | Soap | Receptacle(waste water) | Toilet | Budget-water supply | Total no. of facilities. |
| Forest Hill college | 478 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 6 |
| Seeta HS | 1076 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 6 |
| Mbalala Islamic | 421 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 5 |
| Good mark HS | 293 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 5 |
| Mbalala SS | 391 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
| Excel HS | 303 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 3 |
| St. Andrew | 381 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 4 |
| Namataba SS | 301 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 4 |
| Mbalala parents | 235 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 3 |
| St. John | 231 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| St. Luke | 192 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Green Hill | 171 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| St. peters | 137 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Destiny HS | 43 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 |
| Mama Ruth | 97 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Total number of facilities | | 6 | 10 | 5 | 1 | 1 | 15 | 11 |  |

Source; Developed by the author, 2019

The availability of soap in schools is crucial to the promotion of school-based handwashing with soap (HWWS). However, it is well understood that the mere availability of soap does not imply the existence of a handwashing station, as additional facilities are required. The results show that only 7% of the schools had soap available, it is also evident that only 67% of the schools had a functional handwashing station, and therefore the use of soap (which was mostly found in front of offices of teachers) could have been used for other purposes such as washing teachers’ dishes after meals. Furthermore, the situation in which only 19% of schools had a handwashing facility attached to (or located within the premises) of a toilet facility appears worrisome and inconsistent with existing guidelines for setting up WASH facilities in schools. It is common knowledge that the proximity of a handwashing facility to a toilet facility can potentially influence adherence to HWWS after toilet use.

The situation in which a large number of schools use a shared receptacle for students’ handwashing, and only 13% shared cotton towel for students’ hand drying leaves much to be desired. In a country where infectious diseases continue to claim many lives, the implications of this practice on cross-infections is a matter of concern.

The gloomy situation described above could potentially be explained in part by the WASH facility deficiency which appears to be characteristic of many schools in the sub county. The result of the scalogram analysis points to a situation where many schools are constrained in terms of basic facilities such as a functional water facility, a functional handwashing station, availability of soap, paper towels, and a financial provision for WASH.

Differences in proportions of handwashing facilities.

With respect to functional handwashing stations in schools, the mean student enrolment was higher for schools which had this facility when compared with schools which lacked this facility. The higher student enrolment figures observed among schools with a functional hand washing stations could suggest the possibility of a facility-driven selection of schools by parents or guardians. However, it is beyond the purview of this present study to draw such conclusions since additional studies may be required to draw a conclusion. The existence of a functional toilet handwashing stations was however not associated with the existence of a functional toilet facility, which is an issue of concern considering the crucial complementarity of a handwashing station and a toilet facility.

Furthermore, a greater proportion of schools which had a functional water facility also had a functional handwashing station. The existence of a functional water facility in a school is crucial to the setting up of a functional handwashing station. Among others, this facilitates the provision of adequate running water which has been identified as key to the practice of proper handwashing with soap.

Similarly, a greater proportion of schools which had a financial provision for water supply also had a functional handwashing station. To ensure the sustainability of functional handwashing stations in schools, the role of a budgetary allocation is imperative, and the result of this study has shown that a financial provision is essential to the existence of a functional handwashing station in schools.

# **Limitation.**

The generalization of results of this study is limited to settings which have socio-economic characteristics similar to that of the geographic scope of this study.

**Conclusion.**

The importance of having an enabling environment to enhance the adoption of healthful behaviours is widely known among the health promotion fraternity. Ensuring the existence of adequate hygiene facilities in schools is a good way towards creating an environment which enables the adoption and maintenance of a safe hygiene behaviour among school children. The evidence generated by this study suggests a hygiene facility deficit across a range of schools.

Also, results of this study indicate that there is not enough evidence to accept the two null hypotheses formulated. Thus, schools with a financial provision for water supply tend to have a functional handwashing station. Similarly, schools with a functional water facility within its compound tend to have a functional handwashing station. This implies that concerted efforts by government, educational authorities and civil society organisations towards assisting schools especially in low resource areas to have a sustainable budgetary allocation for WASH facilities will be imperative.

**Abbreviations.**

Index; HA: Alternative Hypothesis;

Ho: Null Hypothesis;

HW: Handwashing;

HWWS: Handwashing with Soap;

M: Mean;

UNICEF: United Nations Children’s Fund;

WASH: Water, Sanitation and Hygiene;

WinS: WASH in School.

HWWS: Handwashing with soap.

VIP: Ventilated Improved pit latrine.

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