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“When you are healthy, your mind is healthy”: An Evaluation of Save the Children’s School Health and Nutrition Program in Nairobi, Kenya

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By

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Bachelor of Arts
Stanford University
2012

Chair: Thomas Clasen, JD, MSc, PhD

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ABSTRACT

"When you are healthy, your mind is healthy": An Evaluation of Save the Children's School Health and Nutrition Program in Nairobi, Kenya

By Andrew Juhnke

Background:
Kenya continues to face challenges with the health of schoolchildren due to poor management and dissemination of guidelines and services. The 2009 National School Health Policy provided a building block for improvements in health programming in schools, but much progress has been stymied due to lack of resources, a failure to focus on WASH as the root cause of many health issues, and programming that promotes unsustainable health activities and practices. School Health and Nutrition programs are essential to addressing these issues and improving children's abilities to learn effectively, stay in school, and contribute to their communities.

Objective:
This project evaluated Save the Children's School Health and Nutrition program implemented in Nairobi, Kenya from 2013 to 2015 to determine the success of indicators, goals, and objectives. The purpose of this project was to determine the potential effects of the SHN program on schoolchildren's knowledge, attitudes, and practices, as well as the state of health in schools in Nairobi. This project sought to use findings to make recommendations to all stakeholders, as this was the first complete endline evaluation done for a Save the Children SHN program in Kenya.

Methods:
The endline evaluation was performed using a cross-sectional study design. Endline data was collected at one point in time for each sampled school using student questionnaires, head teacher questionnaires, facility observations, and school records. The endline evaluation design measured differences between baseline and endline for stated objectives and indicators and stratified results to find correlations. The evaluation was carried out in the same fashion as the baseline evaluation conducted in 2013.

Results:
School attendance rate increased and diarrhea incidence decreased among schoolchildren in program schools over the two-year period. Gaps between knowledge and behaviors, such as handwashing, were still found to exist. Stratified results found correlations between rural or urban school location and certain measured factors. Further, results comparing students in School Health Clubs and those not in SHCs showed that while that status may play a factor in health, the peer-to-peer trickle down effect caused equality among many SHN elements.

Discussion:
Despite limitations due to issues with baseline evaluation and program implementation in 2013, this endline evaluation found positive effects of the program on a range of health topics. Students and teachers reported program activities as positive influences on overall school health. Lastly, sustainability efforts have provided an avenue for schools to continue SHN activities, and lessons learned will be used in the implementation of future Save the Children SHN programs in Kenya.

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ABBREVIATIONS AND ACCRONYMS

ABC	-	Abstinence, Being Faithful, Condoms
BMI	-	Body Mass Index
CARE	-	Cooperative for Assistance and Relief Everywhere
CRC	-	Convention on the Rights of the Child (UN)
DAC	-	Development Assistance Committee
DALY	-	Disability-Adjusted Life Year
ECD	-	Early Childhood Development
EFA	-	Education For All
FGD	-	Focus Group Discussion
FRESH	-	Focusing Resources on Effective School Health
GBD	-	Global Burden of Disease
GDP	-	Gross Domestic Product
HIV/AIDS	-	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IEC	-	Information, Education, and Communication
IRB	-	Institutional Review Board
KAP	-	Knowledge, Attitude, and Practice
LMIC	-	Low and Middle-Income Countries
LSBE	-	Life Skills-Based Education
LST	-	Life-Skills Training
M&E	-	Monitoring and Evaluation
MDGs	-	Millennium Development Goals
MEAL	-	Monitoring, Evaluation, Accountability, and Learning

MOE	-	Ministry of Education
MOH	-	Ministry of Health
MOPHS	-	Ministry of Public Health and Sanitation
MOU	-	Memoranda of Understanding
MTCT	-	Mother to Child Transmission (of HIV)
NESP	-	National Education Sector Plan
NGO	-	Non-Governmental Organization
NSHG	-	National School Health Guidelines of 2009
NSHP	-	National School Health Policy of 2009
OECD	-	Organization for Economic Cooperation and Development
PPS	-	Population Proportion to Size (Sampling)
QLE	-	Quality Learning Environment
RCT	-	Randomized Control Trial
SAS	-	Statistical Analysis System
SCI	-	Save the Children International
SHC	-	School Health Club
SHN	-	School Health and Nutrition
SMC	-	School Management Committee
SOP	-	Standard Operating Procedure
SRH	-	Sexual and Reproductive Health
STDs	-	Sexually Transmitted Diseases
STH	-	Soil-Transmitted Helminthes
SWASH+	-	School Water, Sanitation, and Hygiene Plus Community Impact

SWS	-	Safe Water System
TAC	-	Teacher Advisory Center
TIPs	-	Trials of Improved Practices
UN	-	United Nations
UNESCO	-	United Nations Educational, Scientific, and Cultural Organization
UNICEF	-	United Nations Children's Emergency Fund
WASH	-	Water, Sanitation, and Hygiene
WHO	-	World Health Organization

CHAPTER 1: INTRODUCTION

1.1 Introduction and Rationale

Kenya continues to face challenges with schoolchildren health despite an improved 2009 National School Health Policy, mainly due to the poor management of, resources dedicated to, and dissemination of those guidelines and services (1, 2). In 2011, Save the Children (SCI) and the Wrigley Company Foundation partnered to develop and implement a School Health and Nutrition (SHN) intervention in Nairobi, Kenya to support these efforts (3). SHN programs are essential to improving children's abilities to learn effectively, stay in school, and effectively contribute to their communities. The Save the Children SHN program began with Phase I in 2011, providing schoolchildren in Kenya paths to improved health and nutrition services and practices, as well as raising knowledge, awareness, and attitude levels (3). Phase II of the program began in 2013 and came to a close in August 2015, with a specific focus on continuing to build the capacity of Phase I's School Health Clubs (SHCs) and enhancing the management of WASH (water, sanitation, and hygiene) facilities to make lasting improvements to the program schools' overall health (4). This report details the endline evaluation of the activities, goals, and objectives of Phase II of the Save the Children SHN program in Nairobi and provides insights into the evaluation findings, the successes and failures of the program, and the ramifications of all of those moving forward.

1.2 Problem Statement

Despite the establishment of free primary education for all introduced by the Kenyan government in 2003 to work toward the Millennium Development Goal (MDG) of universal primary education, enrollment and attendance rates in primary schools in and around the capital of Nairobi still suffer, with one of the driving factors being the inability for children to maintain

good health and combat health issues when they do arise (61). In 2012, the attendance rate in urban primary schools in Kenya was 80.6 percent, with an even lower rate of 72.5 percent in rural schools (13). More alarming, the rate for the poorest 20 percent of the country was a staggering 57.6 percent (13). This indicates that although schooling is free, there are other barriers such as poor health due to inability to access resources like clean water and medication to prevent disease spread. Additionally, public spending on health as a percent of GDP in Kenya was a lowly 1.8 percent from 2007 to 2011 (13).

With the improvement of school attendance due to the free education policy and the fact that access to clean water and sanitation, as well as handwashing, have been shown to reduce absenteeism, improved WASH in schools is crucial to solving a variety of issues in this sphere (44). Overall in the country, only slightly over 60 percent of people use improved drinking water sources and less than 30 percent use improved sanitation facilities, with school statistics mirroring that of the general population (13). As stated by CARE in a 2015 publication, "The problem of school WASH in Kenya is serious" (62), and low access to drinking and handwashing water, insufficient and dirty latrines, and consistent lack of soap are prevalent throughout the country (62). Further, for schools specifically in Kenya, various studies have found that in many rural areas of the country, no more than 60 percent of primary schools have handwashing water, 16 percent have clean latrines, and only 2 percent have consistent provision of soap (44).

Although many primary schools in and around Nairobi have involvement from various NGOs providing some form of school health or WASH programming (as many as 76 percent supporting WASH in some studies), sustainability and consistent resource availability continues to be a problem (44). Outside of WASH, oral health and sexual health, as well as nutrition, also

lag behind desired levels in Kenya. Comprehensive school health programs combined with continued lobbying of the government to uphold beneficial policies and fulfill commitments are critical to overcoming the obstacles to a successful cycle of improved attendance leading to improved health leading to further improved attendance, and ultimately, more productive and healthy future communities.

1.3 Purpose Statement

The purpose of this project is to evaluate the effectiveness of the Save the Children SHN program in: positively changing schoolchildren's knowledge, attitudes, and practices related to SHN and WASH; increasing schoolchildren's access to primary health and nutrition services; improving access to safe water and sanitation at schools; promoting awareness and understanding of health behaviors and practices among schoolchildren, their teachers, and their parents; and strengthening the application of the 2009 National School Health Policy.

1.4 Objectives

- Objective 1: Measure the extent to which the program met its stated objectives over the course of the intervention.
- Objective 2: Determine if there are statistically significant differences in schoolchildren from participating schools' knowledge, attitudes, and practices between pre-test and post-test.
- Objective 3: Recommend improvements for longer-term strategies, focusing on program quality, management, accountability to beneficiaries, and contribution to learning in a wider sense within the organization and program areas.

1.5 Significance

The Save the Children, Wrigley-sponsored SHN program has not undergone any endline evaluation as of yet, either in Kenya or another program country. This program evaluation will help improve future iterations of SCI SHN programs. Through continued monitoring and evaluation activities, in addition to increased community involvement, the SHN program is sustainable far past the end of the program duration. The endline evaluation as described in this report clearly shows an effectiveness of the Save the Children SHN program and a legitimate benefit to the children, schools, and other stakeholders involved. Recommendations stated herein are designed to provide Save the Children Kenya with a path to future success in SHN and a continued positive impact on children in Kenya for years to come.

CHAPTER 2: LITERATURE REVIEW

A review of the literature was undertaken to provide insight into: the seriousness and reality of the health issues being addressed by the School Health and Nutrition program; the connection between the program content and activities, and the intended outcomes and impact; and the evidence of the efficacy of such type of interventions. Published journal articles were reviewed to determine the legitimacy of these aspects and their relation to the specific SHN program administered by Save the Children in Kenya. Prior school health intervention evaluations were reviewed to exemplify the current breadth of public knowledge and to demonstrate the new information that this evaluation is presenting to the public health community on successful and unsuccessful aspects of school health programming.

2.1 Background of SHN/WASH in Kenya

2.1.1 History

The Kenya Ministry of Health created the Division of Child and Adolescent Health in 2001 to oversee all child health activities for children age zero to 18 years, including promoting the health of children both in and out of schools, overseeing comprehensive school health programs for six to 18 year olds, and delivering a variety of school health services (5). These services include: screening and examination; immunization; micronutrient supplementation; health education; maintenance of hygienic school environment; reproductive health information dissemination; and introduction of life skills (5). The Bill of Rights of Kenya's 2010 Constitution further clarified and documented that children have the right to basic nutrition, healthcare, and education (6), and that schools are "one of the key settings for promoting children's…health and safety" (7). That said, Kenya's 2011-2015 National Plan included increasing access to adequate and safe water in schools, constructing sanitation facilities in 70 percent of schools, erecting new

toilets in 10,000 schools, and conducting school-based handwashing campaigns in 5,000 schools (7). The Kenyan government also made an agreement with UNICEF to start a pilot initiative on a total sanitation-programming framework, which led to a new national WASH policy (8), and the Ministry of Health (MOH) developed a Child Survival and Development Strategy, specifically targeting children's health in schools through their adolescent development (9).

2.1.2 Current state and policy

School Health and Nutrition is currently one of Kenya's Basic Education Investment priorities documented in the National Education Sector Plan 2013/2014 – 2017/2018 (NESP), with the objective of improving the health and nutrition status of students to enhance their access to education and their learning achievement (10). A 2013 to 2017 Health Sector Strategic and Investment Plan holds as one of its main goals collaboration of health related sectors to provide complete school health packages that focus resources on safe water, sanitation and hygiene, and school health education (11). The service packages specifically include: school feeding and nutrition; school health promotion; school-based disease prevention; and school WASH (11). In addition, the new 2014-2030 Kenya Health Policy as set out by the MOH, states that, "The policy embraces…the right to health of children" (12) and declares that, "Children have the right to basic nutrition and healthcare" (12).

Despite these broad-sweeping policies, clean water and sanitation in schools are both still major problems, with only 60.9 percent access to improved drinking water and 29.4 percent access to improved sanitation facilities among schoolchildren at school (13). A 2009 study by the MOH found that unsafe WASH is the second leading overall risk factor and contributor to mortality and morbidity, accounting for 5.3 percent of deaths and 5.3 percent of disability-adjusted life years (DALYs) (12). Internal studies have shown that improving sanitation,

hygiene, and nutrition in Kenyan schools will create "considerable benefits in terms of improved child health, attendance, retention, [and] performance…" (7). School attendance, which is heavily influenced by a child's ability to stay healthy, was only just over 70 percent for primary school and 40 percent for secondary school in 2012, with around 872,000 girls missing at least four days of school per month while menstruating due to lack of sanitary pads and inadequate facilities in schools (6, 7). Kenya continues to face challenges with schoolchildren health despite an improved 2009 National School Health Policy (NSHP) that currently governs school health, mainly due to the poor management and implementation of the policy guidelines (14, 15).

2.2 Empirical Necessity of the Save the Children SHN Program

In Kenya, "over 50% of hospital visits are…for illnesses are related to WASH" (16). In addition, 2010 African estimates reveal that diarrhea accounts for 12 percent of deaths in children (17). In 2013 in Kenya specifically, only around 30 percent of schools had access to proper WASH facilities (18). A Child Rights Situation Analysis performed by Save the Children in 2013 revealed that there was "low community awareness of key health promoting behaviors" and that schoolchildren had "low awareness on the importance of hand washing with soap…[and] poor knowledge on early signs of common illnesses" (18).

2.2.1 Schoolchildren's health

Children spend long hours in schools, with the school environment influencing children's health and well–being and children's health and well-being influencing their ability to succeed and advance in the classroom. Studies show that only 19 percent of the world's population performs handwashing with soap after contact with excreta (19), however research shows that consistent handwashing with soap behavior can reduce diarrheal and respiratory illnesses by 30 percent to 50 percent (17, 18). Further, a six-country, school-based evaluation of a UNICEF

hygiene program found that less than 33 percent of schoolchildren wash their hands with soap after latrine use (17).

There has also been particular increased emphasis on menstrual hygiene in schools since the inception of the MDGs. All girls should have access to safe, clean, separate and private sanitation facilities in schools, however many primary schools in low-income countries often do not have the knowledge or resources to provide what is necessary for proper menstrual hygiene and health. Adequate and separate facilities, including disposal bins and access to sanitary pads, for girls in primary schools is strongly supported by the Focusing Resources on Effective School Health (FRESH) framework. Interventions within this framework are needed in low-resource areas in Kenya in order to ensure that these specific young female needs are being met.

2.2.2 WASH-related issues in LMICs

A 2012 retrospective data analysis performed by Pruss-Ustun et al., and updated in 2014, examined WASH and the corresponding burden of disease in 145 low- and middle-income countries (20). In 2012 alone, inadequate drinking water caused 502,000 deaths in the 145 countries, with 280,000 deaths caused by inadequate sanitation (20). Even more striking, 297,000 deaths were directly from inadequate hand hygiene, which often had to do with poor behaviors and lack of resources (20). Further, 1.5 percent of the total disease burden in the countries studied was caused by inadequate WASH, with over 360,000 clearly preventable deaths in children (20).

There has also been found to be an association between schoolchildren's toilet use and the attributes of the toilet facilities, including age, type, and number (21). A linear relationship also exists between decreasing pupil to toilet ratio in schools (i.e., more toilets per each child) and increasing toilet use by pupils (21). Programs to address low proportion of facilities and their

poor quality will lead to increased sanitation and potentially increased hygienic practices among the at-risk population of schoolchildren.

2.3 Empirical Foundation of SHN and the Save the Children SHN Program

The UN Convention on the Rights of the Child (CRC) not only insists that children have a right to basic education, but also asserts what form that education should take in its design, organization, management, content, processes, and learning environments (22). The essential characteristics of an enabling learning environment are concisely summarized in the concept of the "child-friendly school", providing a valuable reference point for reforming education systems from the perspective of the rights and interests of the child. Child-friendly schools not only help children to realize their right to a basic education of good quality, but they also address such important issues as enhancing their health and well-being, helping them learn how to face the challenges of their future (life skills), and guaranteeing them safe and protective places for learning.

There are different conceptualizations of child-friendly schools, with some organizations emphasizing the physical and mental health of children and others giving more attention to education access, equity, and quality. One certain concept holds true, though: the school environment influences children's health and well–being due to long hours spent there. SHN programs, therefore, are essential to improving children's ability to learn effectively, stay in school, and contribute to their communities. SHN is an essential element of quality education, addressing the critical health and nutrition factors that keep children out of school and that reduce their ability to learn successfully when in school.

SHN can take many shapes, but in primary schools in low-income countries, such as Kenya, WASH, sexual health, and nutrition are crucial to quality education and child

advancement. Improved sanitation in the form of access and use of facilities for safe disposal has been proven to reduce the risk of transmission of soil-transmitted helminthes (STH), an indicator for child health in low-income areas (23). STH infections are extremely common worldwide, particularly in low-resources areas, and are caused by various species of worms that contaminate soil in places of poor sanitation. A 2012 systematic review and meta-analysis of 39 data sets on the effect of sanitation found that availability of sanitation facilities was significantly associated with protection against infection (23). Further, the Global Burden of Disease (GBD) Study 2013 published in *The Lancet* found that, "Large gains in life expectancy in sub-Saharan Africa were mainly driven by reductions of diarrhea" (59), with poor sanitation as a critical risk factor. The results of the 2012 review showed that health education in schools centered on improved sanitation is useful to achieving a general reduction in STH transmission and infection (23), with pooled estimates from a second analysis revealing that there is "at least a 33% reduction in odds of infection associated with individual WASH practices or access" (24). Handwashing interventions in schools, both those focused on water and hygiene, have shown "benefits" in recent randomized control trials (RCTs), particularly in studies that are tailed for social-ecological contexts (24). This context-based program design is an important departure from past findings that strictly viewed the technical aspects of WASH interventions.

Peters et al. explored literature on 55 reviews and meta-analyses from 1995 to 2006 on sexual behavior, nutrition, and substance abuse interventions in schools. The authors found that five elements were consistent across reviews that were "strongly rated" (25). These were: the use of theory, addressing social influences and social norms, addressing cognitive-behavioral skills, training facilitators, and the existence of multiple components (25). Programs that address the five elements should have more success in targeting the necessary behavior changes. Of note is

the idea that SHN interventions benefit from an all-encompassing viewpoint, that bypasses the simplistic view of treatment or preventative medicine and looks to the context, the stakeholders, the influences, and the general ability, confidence, and skills of those being targeted.

2.3.1 Health and nutrition in school settings

The essential elements of effective SHN programs were agreed upon by the WHO, UNESCO, UNICEF, and the World Bank during the 2000 Dakar World Education Forum, and they entail: increasing health and nutrition services at school; increasing access to safe water; improving sanitation and handwashing facilities; promoting lifelong health behaviors through skills-based health education; and ensuring health-related school policies and support at all levels (26). The Dakar strategy session aimed at raising the education sector's awareness of the value of implementing effective school health, WASH, and nutrition programs as one of its major strategies to achieving Education for All (EFA) (26).

The WHO's Health Promoting Schools framework asserts that "healthy children achieve better educational outcomes, which, in turn, are associated with improved health later in life" (27). The framework, which was developed in the late 1980s, is founded upon the idea that the school curriculum, the school ethos and environment, and the surrounding families and communities are the cornerstones of a reciprocal relationship between health and education (27). A 2015 Cochrane systematic review and meta-analysis explored 67 trials in schools on varying health issues and found positive effects for BMI, physical activity, physical fitness, fruit and vegetable intake, and tobacco use (27). Further, a 2012 UNICEF cross-sectional survey of WASH in Nicaraguan primary schools found that, "Water, sanitation, and hygiene in schools contribute to better health and educational outcomes among school-aged children" (28). This example of a low-income country using schools as a platform to improve children's health, and

therefore improve their outcomes, provides the foundation for a school-based program to improve health.

Lastly, a major 2008 study on WASH in schools, which looked at long running projects in Kenya found that, “the impacts of well-designed and funded WASH-in-schools programmes can be substantial, long-lasting and extend beyond the school and into the homes of the pupils” (8).

2.3.2 FRESH framework

As a measure to enhance the quality and equity of education, international agencies have agreed on the FRESH common framework for school health. Save the Children SHN programs are grounded in the FRESH framework by focusing on responding to the needs of children, increasing the efficacy of investments in child development, ensuring better educational outcomes, achieving greater social equity, and doing so in a highly cost effective manner. Grounding SHN projects in the FRESH framework also provides clear and concise reasons to foster effective partnerships between the following: the education and health sectors; teachers and health workers; schools and community groups; and pupils and those administering the SHN program.

The FRESH framework is designed to provide the necessary context for provision of safe water and sanitation facilities for children in schools, particularly in low- and middle-income countries. Creating a healthy school environment by provision of safe water and sanitation facilities within schools has been shown to improve children’s health, wellbeing, and dignity when it is supported by other reinforcing strategies (29). These strategies include: skills-based education, life-skills training, policies to provide a non-discriminatory safe and secure environment, provision of health-related services, effective referral to external health service

providers, and links with the community. The FRESH framework provides this context by positioning provision of safe water and sanitation among its four core components that should be made available together for all schools (29).

2.3.3 Life-skills based education/Life-skills training/QLE

Save the Children's mission is to inspire breakthroughs in the way the world treats children, and to achieve immediate and lasting change in their lives, particularly in their health. The Save the Children SHN program in Kenya is also in line with the organization's Global Education Strategic Objective To Basic Education where Save the Children ensures supported schools are Quality Learning Environments (QLE), meaning that marginalized children have increased access to quality, inclusive basic education. The SHN program enables children to stay in school to reach their educational potential, while also learning skills to keep themselves safe and healthy for life.

Life Skills-Based Education (LSBE) enables learners to acquire and develop skills and traits such as critical thinking, problem solving, decision-making, interpersonal relationships, stress and anxiety management, effective communication, self-esteem, and assertiveness (30). SHN programs based on this idea of fostering learning and health, using all of the measures of the Kenya National School Health Guidelines (NSHG) at their disposal, will promote the health of learners in schools through life skills, empowerment, and ownership.

Further, life-skills training (LST) can be used in WASH education to help children make informed decisions and avoid risky behaviors. LST is more effective than traditional teaching methods in influencing behavior rather than just imparting knowledge (31). These skills are best acquired through learner-centered and participatory programs, for example school health clubs (SHCs).

2.3.4 The use of peer-to-peer education and SHCs

The SCI SHN program is centered on the theory of peer-to-peer education where children engage with each other to gain knowledge and change behaviors. Peer education has not only been proven to increase sustainability, but also boosts children's confidence, promotes critical and creative thinking, and develops decision-making and problem-solving skills (32).

Mellanby et al. performed a critical review of research on peer-led health education in schools in 2000. The review compared the "effects of peers or adults delivering the same material" (33). The authors examined 13 studies that compared peer-led and adult-led education. All studies were health-related, including ten on substance use prevention, one on sexual health, and one on oral health (33), all components of SCI SHN programming. In all but one study, "peer-led groups gained as much knowledge or more than the adult-led group", with three studies also showing peers to be effective in altering attitudes compared to zero studies showing this for adults (33). The review evidence suggests that peer-led education may actually result in more positive and greater changes in behavior as compared to adult-led education.

Medley et al. went further to perform a systematic review and meta-analysis of peer education interventions in developing countries specifically. The review and analysis focused on HIV prevention and thus provides a strong launch point for comparison for general school health programs in East Africa, where HIV is a significant issue and a main concern for school-age youth. The authors examined studies done between 1990 and 2006, and they found that peer-education interventions were "significantly associated with increased HIV knowledge…and increased condom use" (34). The meta-analysis results showed odds ratios for those increases of 2.3 and 1.9, with 95% confidence intervals of 1.9 to 2.8 and 1.6 to 2.3, all respectively (34). While there was no effect in any of the studies on "biological outcomes", STI infection was the

only biological outcome measured in any study and thus there was not a large sample of biological outcomes to explore (34). Further, despite lacking evidence for positive biological outcomes, increased condom use does suggest that peer-education interventions can go beyond knowledge change and actually lead to positive behavior health changes.

A UNICEF case study from 2009 found that children's hygiene behaviors benefited from child-to-child peer education (35). The study, conducted in Tajikistan, a country where Save the Children has the same SHN programming as it does in Kenya, showed large improvements in handwashing after toilet use (82 percent increase) and provision of soap near the toilet (75 percent increase), as well as an attributable reduction in diarrhea rates from baseline to endline, using a comparison group for reference (35). Further, a 2009 UNICEF report from Sierra Leone found that school health clubs specifically are effective in increasing community knowledge of pertinent health issues, which was then found to lead to community support and increased action for schoolchildren, including latrine facility construction at schools (35). The SHC students used games and sports to communicate health messages to their friends and families, and reported feeling a "serious responsibility" to "pass these messages on" to their peers (35).

A 2004 feasibility study conducted by Onyango-Ouma et al. explored the potential of using this same type of SHC format, with forty primary schoolchildren undergoing a two-moth intervention and thereafter serving as "health communicators" within their schools for up to one year (36). The intervention was inspired by the child-to-child approach to health education described by Hawes and Scotchmer in 1993 (37). The approach focused on action-oriented and participatory education through active learning. The selected health communicator students received the intervention six hours per week for a two-month period. Their preparation through the participatory education led them to become health communicators whereby they

disseminated information to fellow students and even teachers, and they also encouraged other students to take action at school as well as at home (36). The intervention emphasized the action and participation of children, which was found to produce more conceptual changes and therefore more health-protective actions and behaviors. This model is the basis of a SHC format used by Save the Children in SHN programming whereby peer-to-peer education through a set of peer "health communicators" leads to "increased ownership, further commitment, [and] continued learning" (36).

2.4 Evaluation of Interventions

2.4.1 WASH interventions in Kenya

A 2012 evaluation of a 2010 UNICEF program, "SOPO", which took place in 225 primary schools in Nyanza and Rift Valley Provinces in Kenya, found that increasing health knowledge does not necessarily improve health behaviors without addressing multiple factors that affect behavior and creating pathways for the maintenance of facilities and resources (38). The program, which was developed by UNICEF's Kenya Country Office, the Kenya Ministry of Education (MOE), and the Kenya Ministry of Public Health and Sanitation (MOPHS), consisted of the following: a single, three-hour long assembly per school where the SOPO mascot, a green bar of soap, was introduced; performance and introduction of songs and dances reminding students of times to wash their hands; demonstration of proper handwashing techniques using the school facilities; and distribution of activity books and t-shirts to the schoolchildren (38).

The program aimed to increase handwashing with soap among schoolchildren through an intervention in the school setting. Outcome variables of the study included observation of handwashing facilities at the school, observation of student handwashing behaviors after using the toilet and before eating during the school day, and knowledge of the four critical

handwashing times (38). Variables were measured after program completion via direct observation by field staff and through interviews with the schoolchildren. Students' knowledge and behaviors at SOPO program schools were compared with those at schools in the same provinces that did not receive the SOPO intervention in the same time period.

Evaluation results showed that, two years post-intervention, 33 percent of schoolchildren from SOPO schools were able to identify the four key times for handwashing with soap, while only three percent of children from non-SOPO schools could name all four (38). A similar 2006 study by O'Reilly et al. also revealed that school-based WASH interventions are capable of improving students' knowledge of when to wash their hands, as well as reducing absenteeism by 30 percent more over time through intervention (39). However, during only three percent of the key times were SOPO schoolchildren observed at follow-up washing their hands with soap, with handwashing occurring after only one percent of fecal contact events and only six percent before food contact events, demonstrating there is still a clear gap between knowledge and behavior for such interventions (38). Further, while 70 percent of SOPO schools had a handwashing station on school grounds, only 13 percent had soap at the handwashing station (38). That being said, the program evaluation outcomes can still be seen as positives as the continued knowledge, even two years after the end of the program, can be leveraged with improved resource allocation and distribution to "motivat[e] behavior change in handwashing with soap" (38).

In 2015, a WASH Benefits study was piloted in villages in rural western Kenya. The study tested combined interventions of hardware provision, water treatment promotion, sanitation and latrine improvement, and handwashing with soap (40). Four months after delivery, an evaluation survey assessed uptake among intervention households and found high uptake with an over 50 percentage point increase in soap availability and a 16 to 47 point reduction in

visibility of stool on floors (40). Despite being household-based instead of school-based, this brief assessment proves that high adoption rates are possible in short periods of time for well-designed combined interventions. Freeman et al. in 2013 further found that children in schools that did not have a regular water source experienced a reduction in diarrhea incidence and days of school missed due to illness after a combined intervention involving water supply improvement, water treatment, sanitation improvement, and hygiene promotion (41).

Saboori et al. explored the problem of sustainable soap provision in a SWASH+ (School Water, Sanitation, and Hygiene Plus Community Impact) study in Nyanza Province in 2010 (17). The immediate study evaluation examined the results of a soap provision intervention whereby some schools received a one 3.5-kilogram bag of powdered soap and ten half liter bottles for soap dispensing. Schools that received soap from the intervention had 32 percent of observed pupils perform handwashing with soap after using the latrine during evaluation (17). Control schools had only three percent of observed pupils perform handwashing with soap. This statistically significant difference showed that "removing the barrier of soap procurement can significantly increase availability of soap and handwashing among pupils" in schools (17). Just as importantly, the study showed that even with a limited degree of handwashing promotion and education, practice and behavior improve overall just due to soap provision. Unfortunately, during evaluation follow-up, the majority of intervention schools "did not consistently provide soap for handwashing" (17), with previous SWASH+ studies confirming that there is between a 40 percent and a 60 percent decrease in soap provision from year one post-intervention to year two post-intervention (17). While soap provision can increase behavior temporarily, there are still sustainability issues with providing a resource that will run out and can often not be easily budgeted for in low- and middle-income countries, such as Kenya.

A 2012 evaluation of a school WASH intervention in western Kenya sought to measure microbiological hand contamination to assess the effectiveness of a behavior change intervention, instead of relying on self-reported behavior (42). The evaluation was part of a cluster-randomized control trial of 135 public primary schools in Nyanza Province. The study had three arms: hygiene promotion and water treatment; hygiene promotion, water treatment, and new latrine construction; and a control group (42). The results found that schools that received one of the two intervention arms were more likely to have handwashing materials available during evaluation following the intervention. However, the increase in number of latrines due to new construction in the second arm actually led to an increase in hand contamination of students at those schools (42). This result shows that actual behavior change education, handwashing demonstration and practice, and soap availability are all essential to school health interventions succeeding in reducing hand contamination. Treatment intervention itself (water purification, facility cleaning, and facility construction) is not sufficient without corresponding promotion and action of preventive behaviors to utilize the "treatments."

Soap, resource, and facility availability was further explored through an evaluation of a CARE program undertaken in 60 rural schools in Kenya in 2005 and 2006. Called the Safe Water System (SWS) and implemented by CARE Kenya, the intervention consisted of point-of-use drinking water treatment and provision of new water storage containers, in addition to conduction of a hygiene education curriculum (43). In this intervention, specific teachers were trained by CARE to be "SWS Patrons" to oversee SWS activities, "including the formation of school health clubs and the promotion of message transfer to other children" (43). In 2008, an assessment of the sustainability of program components was undertaken and found that only five percent of the program schools had detectable levels of treatment in their drinking water and

only one program school had soap near the handwashing containers (43). Only 42 percent of schools reported allocating funds for soap and only 11 percent of schools reported replacing water containers upon their breaking. Handwashing soap was by far the least sustained of the program components and 60 percent of schools reported lack of funds as the reason for this, with a number of others saying soap was repeatedly destroyed or stolen by the schoolchildren (43).

However, 71 percent of schools from the CARE SWS intervention still had at least one SWS Patron after the two-year post-intervention period. Further, 65 percent of schools had trained at least one additional SWS Patron, and 16 percent of schools reported still having an active SHC (although this figure is hypothesized to be negatively skewed due to an unclear definition of the word "active") (43). The program schools that had sustained the most program components shared many traits including: new teacher involvement in school health in addition to the originally trained SWS Patron; school management committee (SMC) involvement in WASH-related activities; and specific budgets set for WASH resources and activities (43). The evaluation found that organization of competitions between SHCs of different schools and the use of the peer-to-peer approach to transferring knowledge from year to year, as well as selecting the next generation of SHC members, increases the effectiveness of such school health interventions. The Save the Children SHN program expanded on many of the findings of that intervention in its design and administration.

Further, a cross-sectional survey performed in 62 primary schools in rural Kenya found that schools receiving WASH-specific interventions were "more likely to have: cleaner latrines, handwashing facilities, and handwashing water" (44). The results were significant with risk ratios of 1.5, 1.6, and 2.7 and 95% confidence intervals of 1.0 to 2.1, 1.1 to 2.5, and 1.4 to 5.2, respectively (44). This study further shows that externally-driven, school-based interventions can

contribute to the "technical" aspects of improving child hygiene and sanitation practices, but again, further support to show that behavior can change as a result of these aspects is needed. Evaluations of more complex SHN interventions, such as the Save the Children one in Kenya, will be useful in determining what further combination of tools is needed to drive that change.

Lastly, a 2013 randomized control trial by Alexander et al. explored the budget issue by testing the potential of a school to improve WASH conditions within existing administrative structures. The study was based on the foundation that "WASH programs in schools have been shown to improve health and reduce absence", but that "inadequate budget, lack of oversight, [and] competing priorities" are barriers to sustained health improvement because of gaps in WASH services (45). Intervention schools received a budget for purchasing WASH-related items and making repairs, funding to hire WASH attendants, and prepared guides for student self-monitoring of WASH facility conditions and use. Evaluation results showed that schoolchildren at intervention schools had increased access to soap and handwashing water, as well as clean latrines (45). Budgets improved access, however budgets alone did not ensure "constant service delivery to students daily" (45), which is in line with the CARE Kenya findings.

2.4.2 Non-WASH SHN interventions

A 2014 systematic review and meta-analysis determined that comprehensive sexual education interventions (i.e., those that were not abstinence only) in low- and middle-income countries had the largest impact in changing HIV-related behaviors (46). The review looked at 64 studies and found that condom use (OR 1.34, p-value <0.001) and fewer sexual partners (OR 0.75, p-value <0.001) were statistically significantly impacted by programs that necessarily involved a range of both school-based and community-based components (46). This is important for the further evaluation of SHN programs because it shows that, while possible for sexual

education to impact HIV and sexual health, it is based on a range of components that must be further evaluated in more detail to determine effectiveness.

2.5 Necessity of this Evaluation

Freeman et al. in 2013 noted that the "impact of school-based WASH on school-aged children has not been rigorously explored" (41). Since 2008, Save the Children has been a lead agency in the development of the "Monitoring and Evaluation Guidance for School Health Programs" (47). Globally, WASH is the most common topic among teacher training for primary school SHN interventions, with the goal of all 14 countries in which Save the Children is performing SHN interventions being to implement and improve WASH (47). It is essential, therefore, that evaluations of the WASH implementation be done as soon as possible in order to determine the efficacy and effectiveness of the organization's global thematic intervention.

Save the Children has run evaluations on various parts of SHN programs in Malawi, Mali, and South Africa since 2014, however the Kenya programs have not been evaluated up until now (47). There are currently over 10 SHN programs throughout Africa that will benefit from an evaluation such as the one undertaken here. Further, this Kenya SHN program being evaluated is one of six global Wrigley-funded Save the Children SHN programs that all follow the exact same model, with similar if not the same objectives, goals, and indicators (18). As the Kenya program is first of this set to reach completion, this evaluation is a necessity for providing recommendations and lessons learned not only to guide future SHN programming in Kenya, but also to influence the remainder of the Wrigley-funded programs in the other five countries to ensure maximized benefit.

CHAPTER 3: METHODOLOGY

3.1 Context

Since 1984, Save the Children has been operating in Kenya with programming aimed at ensuring that children in the country attain their rights to survival, protection, education, and health. In January 2011, Save the Children received funding from the Wrigley Company Foundation to implement a School Health and Nutrition program in 25 primary schools in Nairobi and Kiambu counties in south central Kenya. Nairobi and Kiambu counties were strategically chosen for the intervention as primary schools in Nairobi are urban, while schools in Kiambu are outside the city and much more rural. While Nairobi and its schools are large and populated, Kiambu is more thinly populated and its schools lack the resources that those in Nairobi have available to them. Kiambu County is adjacent to the northern border of Nairobi County; whereas Nairobi County is home to 3.3 million people and is 100 percent urban, Kiambu has a population of only 1.6 million and is more than 40 percent rural.

During the 48 months from program inception to conclusion, the intervention was operating in 25 primary schools: 10 in Nairobi and 15 in Kiambu. The program consisted of two phases of equal length, each with separate funding and objectives; however, both phases took place in the same set of schools. The evaluation described in this thesis was conducted to specifically assess Phase II, which took place from September 2013 to August 2015. Following the completion of Phase I in 2013, a baseline assessment was conducted for Phase II. In contrast to Phase I, Phase II's thematic focus shifted specifically to 1) Oral health and handwashing education and 2) Improved WASH (water, sanitation, and hygiene) infrastructure (4).

3.1.1 Stakeholders

Save the Children was founded in 1919 as Save the Children Fund by Eglanyne Jebb to provide aid to children in Europe (48). Since then, the non-governmental organization has pursued work with the following mission in mind: "To inspire breakthroughs in the way the world treats children and to achieve immediate and lasting change in their lives" (49). As an international umbrella organization, Save the Children has country offices worldwide and serves children in over 120 countries.

Since the 1950s, Save the Children has been operating in Kenya. In 2012, as part of global reorganization, the programs of Save the Children UK, Save the Children Canada, and Save the Children Finland in Kenya were combined to create a single country office in Nairobi (50). Nairobi is also the home to the Save the Children regional office servicing East Africa.

Wrigley, operating as a subsidiary of Mars Incorporated, is headquartered in Chicago, IL and operates and distributes in more than 180 countries worldwide (51). The Wm. Wrigley Jr. Company Foundation (known as the Wrigley Company Foundation), founded in 1987 and serving as the "main source of charitable giving for Wrigley" (52), has put into action the main principle of the organization of making positive differences in the lives of the world's citizens (52) by awarding more than $66 million to organizations and programs with "a focus on oral health, the environment…and sustainable local initiatives" (53). The Wrigley Company Foundation awarded Save the Children a $3.6 million grant in 2013 to "teach better oral health practices to more than 300,000 students and community members across six countries", including Kenya, through school health and nutrition programs (54).

The Kenya Ministry of Health, the Ministry of Public Health and Sanitation, the Ministry of Education, Science, and Technology, and the Nairobi City Council and city public health

department were all equally invested as stakeholders in Save the Children's SHN program in Nairobi and Kiambu. The Ministry of Education was engaged in a participatory approach to making "real and lasting improvements to the WASH infrastructure in targeted schools" (3), in addition to providing services to meet needs, such as adequate water, to empower schools, schoolchildren, and surrounding communities. The Ministry of Public Health and Sanitation and the Nairobi City Council were collaborated with on aspects of the program, including water access and water quality (3).

The 25 primary schools in Nairobi and Kiambu, in addition to all those involved in those schools, including schoolchildren, teachers, and parents, were also key stakeholders in the Save the Children SHN program from 2011 to 2015.

3.1.2 Intended uses/users

The primary intended users of this evaluation are Save the Children International and the Save the Children Kenya country office, in addition to the program schools affected by this and future programs. The Kenya SHN program was the first one of the Wrigley-funded school health programs to come to completion, and as such, its evaluation can provide valuable information, lessons, and recommendations for Save the Children International as it continues to operate Wrigley SHN programs in other countries including China, Indonesia, Philippines, Tajikistan, and Vietnam.

Further, the evaluation will be useful to the Save the Children office in Kenya in their expansion of their WASH capacities and future iterations of SHN programs in the country and in Nairobi specifically. In addition, the evaluation will help Save the Children International internally assess the workings and success of the Save the Children Kenya country office and its work in the field, as well as its internal operations.

Save the Children International requested completion of this endline evaluation on Phase II of the SHN program and collaborated with the author of this report on establishing the evaluation design and processes. Wrigley itself also requested that the endline evaluation be undertaken. Jacquelyn Haver, in her role as Specialist, School Health and Nutrition at Save the Children USA, a branch of Save the Children International, served as principal contact throughout the evaluation. In addition, she was the link between the author, Save the Children International, and the Wrigley Company Foundation. Ms. Haver reviewed the evaluation plan, monitored the evaluation process throughout, and provided external input and resources on the evaluation up until completion.

3.1.3 Evaluation objectives

The overall objective of the endline evaluation was to measure the effects of Phase II of Save the Children's School Health and Nutrition intervention in marginalized peri-urban and rural areas of Nairobi and Kiambu counties in Kenya, and to draw clear recommendations for future SHN programming in Kenya. The endline focused on evaluating the SHN program based on the stated Phase II goals and objectives. Overall, the main goals of this evaluation and subsequent report were to:

i) Measure the extent to which the program met its stated objectives
ii) Measure the program indicators and compare to baseline results
iii) Recommend improvements for longer-term strategies, focusing on program quality, management, accountability to beneficiaries and stakeholders, and contribution to learning within the organization

Further, the Save the Children School Health and Nutrition program Phase II endline evaluation also sought to assess the following, which were set out by the OECD Development Assistance Committee (DAC) (56):

a) Efficiency: The proficiency and expediency by which the program's outputs were achieved in relation to inputs utilized, including measures taken to improve implementation and maximize impact with planned inputs.
b) Relevance: The consistency of the program's outcomes with unmet needs of the target beneficiaries.
c) Sustainability: The degree to which the program's beneficial outcome will continue after completion of activities.
d) Effectiveness: The extent to which the program's objectives were achieved.
e) Impact: The changes, positive or negative, of which the program was responsible through its activities and by-products, either directly or indirectly and either intended or unintended.

3.2 Intervention

The goals and objectives of Phase II of the SHN program were established jointly by Wrigley, Save the Children Kenya, and the Save the Children global SHN team. These were established in a general sense at the baseline of Phase I and were readjusted and adapted for Phase II after Phase I endline in 2013. The goals and objectives were designed in line with Save the Children's principles, organization goals, and desired effect for SHN programming.

3.2.1 Program goal

To improve the health, nutritional, and educational status of school-age children and their families in marginalized peri-urban areas of Nairobi and rural areas of Kiambu County.

3.2.2 Program objectives (3)

1. Increase the availability of services for school-based health, hygiene, and nutrition
2. Improve the quality of the school environment
3. Improve knowledge, attitudes, and interest toward using health services and health protective behaviors in schools
4. Improve the national policy and support environment for SHN

3.2.3 Program activities

Phase II of the SHN program focused on activities that would improve infrastructure and develop more sustainable mechanisms for SHN in program schools. The SHN program was designed to be all-encompassing with a focus on improving SHN through various mediums, including direct education, trickle-down knowledge transfer, resource provision, infrastructure improvement, and awareness of health issues. Program activities centered on a full gamut of health topics that affect schoolchildren and the community, ranging from WASH to nutrition to oral health to sexual health. Save the Children Kenya established SHN program staff to carry out the various programmatic activities and elements such as training teachers on proper SHN techniques, training SHCs on health topics and how to educate their peers, overseeing maintenance and construction of school health infrastructure completed by contractors, holding meetings with parent groups and school management, and organizing awareness days to increase enthusiasm and excitement for school health and the program.

Activity achievement targets were established on a per activity basis at the inception of Phase II through collaboration between the in-country SHN program staff and the international Save the Children SHN team, with input from requests by the donor. These targets were not altered throughout the program, but were tracked periodically in order to allocate budget and

focus resources based on the program implementation plan. The activities and their targets formed the backbone of the SHN program and the basis for the ongoing communication and collaboration with the program schools (Table 1).

Table 1: Planned program activities and targets

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Objective 1: Increase availability of services for school-based health, hygiene, and nutrition, including oral health.			
Conduct first aid training for teachers (including school health teachers)	Train 50 teachers from 25 project schools in Nairobi and Kiambu		
Conduct deworming	Deworm 8,000 children in Kiambu		
Conduct Vitamin A supplementation	Vitamin A supplementation for 1,250 children in Kiambu		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Objective 2: Improve the quality of the school environment so that it is safe and clean, including availability of safe drinking water, handwashing facilities, and latrines.			
Carry out joint needs assessment with SMC members, parents, and children to identify WASH needs	All 25 project schools		
Improve WASH facilities (toilets, latrines, urinals) in 12 schools	10 schools in Nairobi and 2 schools in Kiambu		
Improve access to water via rainwater collection or city water piping in 8 schools in Nairobi	8 schools		
Provision of handwashing points in Nairobi project schools	All 10 Nairobi project schools		
Formulate Memoranda of Understanding (MOU) with the schools that outline how to maintain facilities	All 25 project schools		
Provide repair kits and training on WASH facility management and basic plumbing	All 25 project schools		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Train School Management Committee (SMC) members on resource mobilization	SMCs at all 25 project schools		
Train school officials (teachers and janitors) on WASH operations and maintenance	36 school administrators		
Provide bins for sanitary towel disposal at Nairobi project schools	All 10 Nairobi project schools		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Objective 3: Improve knowledge, attitudes, and interests toward using health services and health protective behaviors.			
Strengthen School Health Clubs (SHC) in project schools	Train 25 School Health Clubs on comprehensive school health topics		
Train School Health Club members on child rights, responsibilities, and participation at all project schools	40 SHC members per schools from all 25 project schools		
Conduct training for School Health Clubs on sexual maturation, including STIs, HIV, and menstrual hygiene	40 SHC members in all 25 project schools		
Train teachers on skills-based health education, including oral health, HIV/AIDS, puberty issues, and menstrual hygiene management	Train 25 teachers (1 per school)		
Conduct training for all SHCs on child-to-child approaches in communication of messages	40 SHC members per each of the 25 project schools		
Work with children and teachers to develop appropriate information, education, and communication (IEC) materials	IEC materials at all schools		
Celebrate significant calendar days (Global	Celebrate 6 significant days (3 per year)		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Handwashing Day, World Oral Health Day, Menstrual Hygiene Day) to promote the uptake of healthy behaviours among children			
Hold inter-school event to promote health in schools	1 event including all 10 project schools in Nairobi		
Select and train adult mentors on SHN concepts and facilitate outreach to other community members	Train at least 1 community health extension worker for each of the 4 sub-counties in Nairobi and 1 sub-county in Kiambu		
Facilitate SHC exchange visits in all project schools	At least 2 exchange visits for SHC members for Nairobi and Kiambu schools		
Hold a community outreach in Kiambu	Hold an open health day reaching at least 100 community members with basic medical care		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Objective 4: Improve the national policy and support environment for school health and nutrition activities, and increase community support at the local level.			
Work with schools to ensure development plans include SHN activities	Create action plans including SHN activities in all 25 project schools		
Support dissemination of the National School Health Policy in Nairobi and Kiambu Counties	30 officers in Nairobi and 30 officers in Kiambu		
Represent SHN program at the School WASH Technical Working Group meetings	Attend each quarterly School WASH Technical Working Group meeting (8 meetings)		
Support children to develop simple messages from the National School Health Policy and share with the community	Development of 1,000 IEC materials with key messages		
Identify and train community leaders on the National School Health Policy	Train 9 District Education Officers and 9 Public Health officers from the nine sub-counties in Nairobi, and 12 District Education Officers and 12 Public Health officers from the 12		

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
	sub-counties in Kiambu		
Advocate with Nairobi City County for water provisioning to ensure adequate water at all Nairobi schools	Enhance access to water for the 10 project schools in Nairobi		

3.3 Evaluation Details and Processes

This endline evaluation mimicked the study design used at baseline in 2013 per the 2013 SHN Baseline Report and Save the Children Kenya records. As the author of this report and lead endline evaluator was not involved in the baseline procedures, reliance on these sources of information was crucial to ensuring that the endline evaluation was conducted comparably to baseline. That said, the author and endline evaluator was responsible for reformatting certain tools at the request of the donor, re-piloting tools to ensure clarity to both the endline sample students and the enumerators, and creating new tools to be used unofficially for internal organizational information.

Further, the author of this report was responsible for the following during the endline evaluation: arranging all tools including needed adaptations from baseline; interviewing and hiring all enumerators used during endline; training enumerators using the Save the Children temporary employee handbook; directly leading evaluation administration and data collection at program sites; liaising with stakeholders to arrange evaluation activities; inputting the totality of all collected data; and analyzing the endline data using SAS Version 9.4.

3.3.1 Evaluation design

The endline evaluation was performed using a cross-sectional study design with systematic sampling of students and purposeful sampling of head teachers. Endline data was collected at one point in time for each sampled school, as it was during baseline. The endline

evaluation was designed to measure the differences between baseline and endline for stated objectives and indicators.

The endline evaluation used a Separate Pre and Post Design, with resampling of individuals. Resampling refers to different individuals being sampled at endline than the ones sampled during baseline (55). This evaluation design was useful for the SHN endline because of the interest in longitudinal data for parameters within a certain age set, primary schoolchildren, and specifically, those in standards six and seven, as they were the age group that the most program activities were developed for due maturation levels. This prevented the need to worry about loss to follow-up and natural turnover as students moved from one standard level to the next, or graduated from or dropped out of primary school altogether. The decision to resample different individuals from the same population was also useful for the endline evaluation because clusters of children within schools were being observed and changes in averages between the two groups, baseline and endline, could be assessed. These two groups, although not the same exact individuals, are like individuals from the same population and have the potential to display consistent or comparable characteristics and demographics.

The data collection tools used during the endline evaluation were the same tools used during Phase II baseline evaluation in 2013, and they were designed by Save the Children's SHN team and Monitoring and Evaluation team. The only adaptations or adjustments made to the tools were additions and adjustments for clarity created by the author of this report in response to requests by the program donor for additional endline information for their uses. The author and lead evaluator was responsible for assurance of consistency of the aspects of the baseline evaluation design and tools.

3.3.2 Program sites and target population

The primary target populations of the endline evaluation were the teachers and schoolchildren at the 25 program schools. The 15 Kiambu County program primary schools were: Gatuura, Githungucu, Gitutha, Kiawanda, Kiriri, Makutanu, Mirithu, Nderu, Nyataragi, Rwacumari, Rwamburi, Tharuni, Thigio, Tiekunu, and Tutu. The population of these schools ranged from 195 schoolchildren to 625 schoolchildren. The 10 Nairobi County program primary schools were: Embakasi, Kamiti, Kayole 1, Mariakani, Mwangaza, Ronald Ngola, Tumaini, Uhuru Gardens, Ushirika, and Vessel of Hope. The population average among these schools was around 1,500, excluding Vessel of Hope, which is an "informal" urban school and as such has an uncharacteristically low enrollment total for the area (42 students). All program sites (except Vessel of Hope) are public, government-funded schools. All program sites received the full SHN program, including the same set of program activities, meetings with stakeholders, and self-sustainability training.

The evaluation involved student surveys, head teacher surveys, observations of school WASH facilities, and review of education records. The student surveys targeted students in standard 6 and standard 7 where the majority was aged between eleven and fourteen, while the teacher surveys targeted head teachers and School Health Club patrons, who are the leaders of the Save the Children-established School Health Clubs in program schools. School Health Clubs are school groups consisting of around 40 students per school who received direct teaching and training on SHN topics and activities from Save the Children staff. These clubs meet regularly and are responsible for performing peer-to-peer education to transfer knowledge and leading the whole school population in SHN activities.

3.3.3 Sample Size

The student questionnaire was administered to 420 students at 15 program schools as a central part of the endline evaluation. There was a multilevel sampling strategy used for this process, which included schools as the primary sampling unit and students in those selected schools as the secondary unit. The sampling method described below was the same method that was used for baseline sampling, and as such, despite significant limitations, was reused for this endline evaluation. The sample size of 420 students was determined using the following formula (60), which is accepted for use in calculating the sample size for surveys of a given population:

$$\text{sample size} = \frac{Z^2_{1-\alpha/2}\, p(1-p)}{c^2}$$

Where:
$Z_{1-\alpha/2}$ = z-value = 1.96 (for 95% confidence interval)
p = percentage picking a choice, expressed as decimal = 0.5 (for sample size needed)
c = confidence interval, expressed as decimal = 0.05

The result of the above formula equaled 384, which was then corrected for a finite population, existing due to the finite number of students exposed to the program. The finite population correction was determined by the following formula (60):

n = sample size / (1 + ((sample size – 1) / population))

The total target population of students from all 25 program schools in both Nairobi and Kiambu was 18,800. Therefore, the final sample size using the second formula above was determined to be 377. Taking into account a possible 10 percent nonresponse error, as is found to be common in Save the Children student surveys, the total sample size needed was 415. In order to standardize the number of students across schools, a final sample of 420 was taken (i.e., 22 at Kiambu schools, 32 at Nairobi schools).

The sample size of schools was determined based on resources available and the population of program schools, despite the limitations of this. The program schools in Nairobi

totaled around 69 percent of the target population, while Kiambu schools made up 31 percent. Population proportion to size (PPS) sampling was used so that the number of students sampled per region was kept intact, with 288 students coming from Nairobi and 132 from Kiambu. Further, because of limited resources relating to the distance and remoteness of Kiambu, it was only possible to sample students from six of the 15 Kiambu schools. While this violates the standard sampling assumption that every student exposed to the program has an equal chance to be selected, this methodology mimicked that used at baseline due to similar budget restraints then. Additionally, the six schools from which students were to be chosen were selected using random selection in Microsoft Excel. While Nairobi schools were more accessible, one school was not available for evaluation due to the school's internal limitations and constraints, and therefore, the other nine Nairobi schools were used in the evaluation.

Due to time and personnel limitations, it was only possible to survey a maximum of 32 students per school. That said, the number of students sampled per school was standardized instead of using PPS at the school level. While this again violates the sampling assumption, and does not provide an equal chance for every student to be sampled due to the varying population sizes of individual schools, it was also the same sampling strategy used at baseline. Lastly, the baseline sample size (393) was slightly smaller than that used at endline due to the lower enrollment rates at the program schools in 2013 compared to 2015. Therefore, the numbers of students sampled per school differed slightly, but not in a significant way for analysis.

3.3.4 Participants/Evaluation population

Students were selected from standards 6 and 7 for the survey. These standards were specifically chosen because the SHN program mainly targeted standards 4 through 8, and since Phase II of the program had been ongoing for two years, students who had the greatest chance to

be most involved in the program activities for the duration of the time were desired. In addition, the exam schedule for standard 8 students limited their ability to participate, and the young age of standards 4 and 5 students was anticipated to potentially impact their understanding of some of the more complicated health concepts in the questionnaire.

Students were systematically selected from each school using the school enrollment registers. Every fifth student was selected using the registers, repeating through the list until the necessary school total (22 for Kiambu, 32 for Nairobi) was compiled. Gender was taken into account in order to get a reflective representation based on the school demographics. In addition, School Health Club members were also purposively sampled to achieve near accurate representation of the proportion of students at each school who were members of the SHC. This allowed for stratification and analysis of data by this characteristic, which was a central program component.

As done at baseline, absent students who were selected via systematic sampling were skipped over and an additional student was added at the end using the continued selection method. This might impact the collected data and results due to the possibility that absent students are more likely to be chronically absent and therefore less likely to have been exposed to or impacted by the program. Skipping over absent students makes possible the skewing of results toward a greater increase in knowledge or proper behaviors by essentially ignoring those students who are possibly more likely to have missed out on program components.

3.3.5 Indicators

Program indicators were established and subsequently measured at baseline, with endline targets then set for each (Table 2). Targets were set by in-country SHN program staff and implementers from the international Save the Children SHN team based on results from Phase I,

focus areas of Phase II activities, the status of various SHN indicators in Nairobi and Kenya overall, and consultation with stakeholders who had internal knowledge of the program. Baseline measurements were also crucial to the determination of the endline target in order to determine feasibility and legitimacy.

All indicators were measured at both baseline and endline using the range of evaluation tools explained in this report. Indicators relating to schoolchildren knowledge and behaviors were measured using student questionnaires and observations, while more overall school health indicators were measured via direct facility observations or head teacher questionnaires. School statistics were determined using either school records of past school activities and resources, attendance records, or head teacher reporting of such. Observation and investigation of indicators by enumerators on site played a role in the measurement of many of the results as well.

Table 2: Program indicators, baseline measures, and endline targets

RESULT INDICATOR	BASELINE	TARGET	ENDLINE	DETAILS
Goal: Improved health and educational status of school-age children				
Education Status				
Student attendance rate	**85%**	**92%**		
Health Status				
% of children with reported diarrhea episode in past 2 weeks	**45%**	**35%**		
Sub-Goal: Improved practices and behaviors, and use of key school-based health and nutrition services				
% of children who report brushing teeth at least twice/day	**70%**	**80%**		
% of children observed washing hands with soap after using latrines[12]	**40%**	**50%**		
Objective 1*:* Increased availability of school-based health, hygiene, and nutrition services				
% of children dewormed	**90%**	**97%**		
% of children in kindergarten supplemented with Vitamin A	**90%**	**97%**		
Objective 2: Improved quality of the school environment				
% of schools with access to safe drinking water (2 liters/child/day of chlorinated water)	**40%**	**85%**		
% of schools with 'sufficient' hand-washing facilities with soap (or suitable alternative) and water	**60%**	**85%**		
% of schools with access to improved latrines, separate for girls, boys, and teachers	**60%**	**70%**		
Objective 3: Improved knowledge and attitudes toward using health services and protective behaviors				
% of children who can indicate causes of dental carry/decay	**62%**	**75%**		
% of children who know that they should brush their teeth every day to maintain healthy teeth and gums	**75%**	**80%**		

% of children who know the key times when they should wash hands with soap	**85%**	**90%**		
% of children who report usually washing their hands with soap and water before eating/after using the toilet	**35%**	**50%**		
% of children who know that using latrines can prevent the spread of diarrhea, diseases, and worms	**99%**	**100%**		
% of children who know that smoking is harmful to their health	**98%**	**100%**		
% of schools with at least 1 teacher trained in and teaching health education and oral health	**100%**	**100%**		
% of schools with active health clubs	**100%**	**100%**		
% of schools who have discussed health in parents' forums at least 3 times per year	**100%**	**100%**		
Objective 4: Improved policy environment for SHN and community support for SHN				
% of schools with active community support of health activities	**78%**	**83%**		
% of schools with improvement plans including SHN activities	**67%**	**77%**		
% of schools that achieved 1 or more health objectives listed in their development plans	**50%**	**61%**		

3.3.6 Instruments

The SHN program endline evaluation was conducted using a combination of quantitative tools and unofficial qualitative processes, such as unstructured discussions with students and teachers (Table 3). The evaluation used pre-coded and open-ended student questionnaires; teacher questionnaires; observation checklists; and reviews of school records; as well as semi-structured teacher interview guides and student focus group discussion (FGD) guides that were used for internal Save the Children information and quantitative data triangulation and confirmation as possible. These qualitative methods were not rigorously administered or analyzed and were used more to help inform the direction of analysis and recommendations. The baseline evaluation completed in 2013 used the same types of tools and methods to administer them.

The student questionnaire, which was the main instrument used in the evaluation, was used to collect information from all sampled pupils and covered the following topics:

- Infection with specified childhood illness (diarrhea)
- Health and nutrition behaviors of school-age children

- Knowledge of and attitudes about various aspects of health and nutrition

The teacher questionnaire focused on SHN activities that were completed at the school during the duration of the program, thoughts about how the program helped the school and where the program lacked, and statistical details about education, academic progress, and quantifiable health activities. The unofficial teacher interviews also collected information on the community support systems and the policy environment related to child health.

The structured observation checklist was used to collect information about the school hygiene and sanitation facilities. The checklist consisted of a wide range of WASH aspects, including: number of toilets, cleanliness of school compound, and availability and type of water.

Lastly, unofficial focus group discussions were conducted with students in order to obtain a clearer understanding of issues that may not have been completely covered or understood by the quantitative tools, and the FGD results were intentionally not rigorously analyzed.

Table 3: Endline data collection methods

Method	Description	Sample
Individual Student Questionnaire (Appendix A)	• 22 schoolchildren from standards 6 and 7 systematically selected per school in Kiambu. • 32 schoolchildren from standards 6 and 7 systematically selected per school in Nairobi. • Information collected on indicators pertaining to School Health and Nutrition knowledge, attitudes, and practices. • Data also collected on menstrual hygiene management from girls who were sampled.	Questionnaires administered to 420 students covering standards 6 and 7, as they were the part of the program target group that had been exposed to the program for its entire two-year duration.
Head teacher, Deputy Head Teacher, or School Health Teacher Questionnaire (and unofficial interview)	• Data on the school's WASH facilities and practices of and approach to water, sanitation, and hygiene management at the school was collected from the head teacher or the most relevant informant (i.e., deputy head teacher or SHC patron). • Consisted of structured survey questions, as well as unofficial, but recorded, open-	One relevant teacher at each of the 15 sampled schools.

(Appendix B)	ended interview questions. • The open-ended interview questions were used in similar fashion to the focus group discussion results: examined and used for triangulation and hypothesizing, but not robustly or officially analyzed.	
Observation of School Facilities (Appendix C)	Direct observation of the latrines, water points, and other sanitation and hygiene facilities, as well as resources and materials at the school, using a structured checklist.	All 15 sampled schools.
Review of School Records (Appendix D)	Education data including enrollment, attendance, and exam scores.	All 15 sampled schools.
Unofficial Focus Group Discussion (FGD) with Students (Appendix E)	Focus group discussions were unofficially used to triangulate findings and to gain a deeper understanding of School Health and Nutrition practices and access.	A total of 6 were conducted. • 8 FGD participants per school from standards 6 and 7. • Reflective representation of boys and girls based on enrollment. • 1 school per day (because of resources and time) was randomly selected to conduct the FGD.

Prior to recruitment of enumerators, survey tools were piloted to assess different aspects, including: quality of information captured in the questionnaire; selection of survey respondents; feasibility of completing questionnaires with selected respondents; timing (ability of the enumerators to carry out the required number per day); role of the supervisors (how the supervisors maintained quality control); and storage and transport of completed questionnaires and tools.

3.3.7 Procedures

a) Training of field staff

A total of ten field enumerators were hired from a qualified applicant pool with experience in social research as a prerequisite. The enumerators participated in a three-day training workshop at the Save the Children Kenya office in Nairobi led by the author of this report. The training focused on intervention background, sampling procedures, interviewing techniques, field procedures, maintaining data quality, ethics and child safeguarding, and familiarization with the data collection tools. The tools were thoroughly reviewed and tested, as the enumerators took part in role-play sessions, coding practice, and peer observations so that they could become familiar with the tools and be comfortable administering them.

b) Data collection

Endline data collection took place over a seven-weekday period from June 15, 2015 to June 23, 2015. Baseline data collection occurred nearly two years prior, over a three-day period from August 13, 2013 to August 16, 2013. During endline, the team operated as one unit, with all ten enumerators and the lead evaluator at each site together. Enumerators were primarily responsible for administering the student questionnaires, head teacher questionnaires, and unofficial qualitative processes, while the lead evaluator conducted the facilities observations as well as handling various quality control measures and coordination, including sampling, throughout the field exercise. Save the Children provided support throughout the data collection process, including transportation, logistical support, and all necessary evaluation materials. Following each day of data collection, a debriefing session was conducted with the field team at the final site of the day to check for understanding of procedures and any successes or challenges

experienced. Enumerators who were skilled at building rapport with the students, especially around sensitive health topics, were asked to share tips and support other team members.

c) Analysis

Data input began immediately after the end of the fieldwork. The collected data was entered into a Microsoft Excel database designed for the evaluation tools. Quality assurance of the data was conducted through logic checks whereby data was checked for errors that would have resulted during entry and coding. Data cleaning was also performed through reviewing and comparing different variables across the data set to check for logic and consistency, particularly regarding accuracy of filter questions. For example, if a record stated that a student had never heard of HIV/AIDS, the data was checked to ensure that the student did not respond to questions on HIV/AIDS transmission and prevention. Data cleaning was further enhanced through basic tabulation of all variables within the data set.

Data processing and analysis was done using SAS Version 9.4, which produced frequency tables, cross tabulations, and standard statistical calculations to determine required program indicators results. Qualitative data was unscientifically analyzed through thematic analysis techniques in Excel. The thematic findings were collated and deductions were made to triangulate or complement quantitative data.

3.4 Ethics

Ethical considerations for this evaluation and report were made. IRB approval was not required for any part of the evaluation or report per confirmation obtained by Save the Children. Informed consent from schools and assent from schoolchildren was obtained, and confidentiality and anonymity of those in the evaluation samples was ensured.

Further, the author of this report and lead evaluator received a formal letter from Emory's

Institutional Review Board (IRB) on August 31, 2012, which stated their determination that this evaluation is a quality improvement study. IRB determined that this evaluation did not require IRB review because it did not meet the definition of “research” or “clinical investigation” as set forth in federal rules and Emory University policies and procedures.

CHAPTER 4: RESULTS

4.1 Introduction to Findings

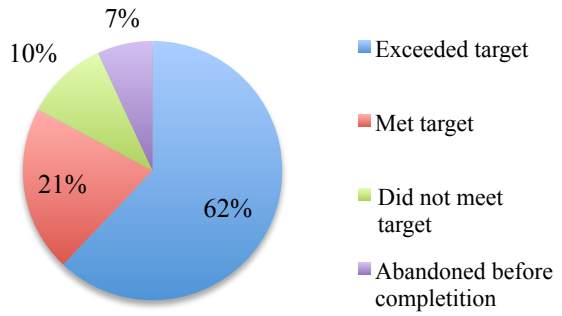
This chapter presents the findings of the endline evaluation of the Wrigley-funded Save the Children School Health and Nutrition program in Kenya. The program took place from 2011 to 2015 in Nairobi and Kiambu counties in Kenya, with Phase II, the portion of the program that was the basis for this evaluation, taking place from September 2013 to August 2015. The entire endline evaluation process was conducted during a three-month period (May 2015 to August 2015) on site in Kenya. Characteristics of participants, program sites, observations, and program delivery methods are discussed. Further, outcomes of the evaluation are addressed, organized by indicator, topic, and demographic.

4.2 Intervention Exposure

4.2.1 Activity completion

The SHN program consisted of 29 activities over the two-year Phase II period (Table 4). All activities were to be conducted at each of the 25 program schools unless otherwise noted as only taking place in a particular number of schools. The activities were divided up by program objective with three activities making up Objective 1, nine making up Objective 2, 11 making up Objective 3, and six making up Objective 4. Of these, 24 were performed as described with the set targets achieved or exceed (Figure 1). Six activities exceeded their target goals, with performance or participation exceeding projections. Of the five activities that failed to meet their

Figure 1: Total program activities (n=29)



targets, two were due to issues of infrastructure at one program school, which was the only non-government-run school in the program. The two activities with zero percent completion were abandoned partway through the program timeframe due to disengagement from the government partner that was responsible for providing the necessary materials for the activity to be carried out. Only one program activity target was not met due to budget constraints and inability to use available time and resources for completion.

Table 4: Planned program activities with actual achievements by endline

Planned Activities	Targets to Achieve	Actual Achieved	% Target Achieved
Objective 1: Increase availability of services for school-based health, hygiene, and nutrition, including oral health.			
Conduct first aid training for teachers (including school health teachers)	Train 50 teachers from 25 project schools in Nairobi and Kiambu	Trained 51 teachers from 25 project schools in Nairobi and Kiambu	102%
Conduct deworming	Deworm 8,000 children in Kiambu	NOTE: This activity could not be carried out because of budgetary constraints. Save the Children could not cover the scope the county wanted covered with the budget available, and this led to a disagreement between Save the Children and the county government on how to conduct this activity. The role of the county was to provide the deworming and Vitamin A tablets.	0%
Conduct Vitamin A supplementation	Vitamin A supplementation for 1,250 children in Kiambu.	NOTE: This activity could not be carried out because of budgetary constraints. Save the Children could not cover the scope the county wanted covered with the budget available, and this led to a disagreement between Save the Children and the county government on how to conduct this activity. The role of the county was to provide the deworming and Vitamin A tablets.	0%
Objective 2: Improve the quality of the school environment so that it is safe and clean, including availability of safe drinking water, handwashing facilities, and latrines.			
Carry out joint needs assessment with SMC members, parents, and children to identify WASH needs	All 25 project schools	All 25 project schools	100%
Improve WASH facilities (toilets, latrines, urinals) in 12 schools	10 schools in Nairobi and 2 schools in Kiambu	9 in Nairobi; 2 in Kiambu	92% Note: This could not be achieved at 100% because of complications with performing constructions at the one informal school involved in the program.
Improve access to water in 8 schools in Nairobi	8 schools	8 schools	100%
Provision of handwashing points in	All 10 Nairobi project schools	All 10 Nairobi project schools	100%

Nairobi project schools			
Formulate Memoranda of Understanding (MOU) with the schools that outline how to maintain facilities	All 25 project schools	All 25 project schools	100%
Provide repair kits and training on WASH facility management and basic plumbing	All 25 project schools	All 25 project schools	100%
Train School Management Committee (SMC) members on resource mobilization	SMCs at all 25 project schools	SMCs at all 25 project schools	100%
Train school officials (teachers and janitors) on WASH operations and maintenance	36 school administrators	48 school administrators. Some projects schools sent more officials than required so that they would have better performance and sustainability.	133%
Provide bins for sanitary towel disposal at Nairobi project schools	All 10 Nairobi project schools	All 10 Nairobi project schools	100%

Objective 3: Improve knowledge, attitudes, and interests toward using health services and health protective behaviors.			
Strengthen School Health Clubs (SHC) in project schools	Train 25 School Health Clubs on comprehensive school health topics	Trained 25 School Health Clubs on comprehensive school health topics	100%
Train School Health Club members on child rights, responsibilities, and participation at all project schools	40 SHC members per schools from all 25 project schools	40 SHC members per schools from all 25 project schools	100%
Conduct training for School Health Clubs on sexual maturation, including STIs, HIV, and menstrual hygiene	40 SHC members in all 25 project schools	40 SHC members in all 25 project schools	100%
Train teachers on skills-based health education, including oral health, HIV/AIDS, puberty issues, and menstrual hygiene management	Train 25 teachers (1 per school)	Trained 26 teachers (2 at 1 school)	104%
Conduct training for all SHCs on child-to-child approaches in communication of messages	40 SHC members per each of the 25 project schools	40 SHC members per each of the 25 project schools	100%
Work with children	IEC materials at all schools	Developed 1,000 health club	100%

and teachers to develop appropriate information, education, and communication (IEC) materials		diaries with input from children, and developed 1,200 flyers with health messages from children, reaching all 25 project schools	
Celebrate significant calendar days (Global Handwashing Day, World Oral Health Day, Menstrual Hygiene Day) to promote the uptake of healthy behaviours among children	Celebrate 6 significant days (3 per year)	Celebrated 6 days over 2 years	100%
Hold inter-school event to promote health in schools	1 event including all 10 project schools in Nairobi	1 event (inter-school sports competition)	100%
Select and train adult mentors on SHN concepts and facilitate outreach to other community members	Train at least 1 community health extension worker for each of the 4 sub-counties in Nairobi and 1 sub-county in Kiambu	Trained 5 community extension workers, 4 in Nairobi and 1 in Kiambu	100%
Facilitate SHC exchange visits in all project schools	At least 2 exchange visits for SHC members for Nairobi and Kiambu schools	4 exchange visits for Nairobi schools and 2 exchange visits for Kiambu schools	150%
Hold a community outreach in Kiambu	Hold an open health day reaching at least 100 community members with basic medical care	Held an open health day that reached a total of 150 community members as well as 66 children	216%

Objective 4: Improve the national policy and support environment for school health and nutrition activities, and increase community support at the local level.			
Work with schools to ensure development plans include SHN activities	Create action plans including SHN activities in all 25 project schools	Conducted needs assessment and created action plans in all 25 project schools	100%
Support dissemination of the National School Health Policy in Nairobi and Kiambu Counties	30 officers in Nairobi and 30 officers in Kiambu	Conducted dissemination workshops in Nairobi and Kiambu for county officers, sub-county officers, TAC (teacher advisory centers) tutors, and public health officers. 31 in Nairobi and 56 in Kiambu.	145%
Represent SHN program at the School WASH Technical Working Group meetings	Attend each quarterly School WASH Technical Working Group meeting (8 meetings)	Attended 8 meetings	100%
Support children to develop simple messages from the National School Health Policy and share with the community	Development of 1,000 IEC materials with key messages	Printed out 100 copies of the National School Health Policy, 100 copies of the National School Health Policy Guidelines, and 100 copies of the implementation handbook; Shared those with the 25 project schools	30% NOTE: This could not be achieved at 100% because of budget constraints.

Identify and train community leaders on the National School Health Policy	Train 9 District Education Officers and 9 Public Health officers from the nine sub-counties in Nairobi, and 12 District Education Officers and 12 Public Health officers from the 12 sub-counties in Kiambu	Trained 9 District Education Officers and 9 Public Health officers from the nine sub-counties in Nairobi, and 12 District Education Officers and 12 Public Health officers from the 12 sub-counties in Kiambu	100%
Advocate with Nairobi City County for water provisioning to ensure adequate water at all Nairobi schools	Enhance access to water for the 10 project schools in Nairobi	9 Nairobi project schools in Nairobi have access to water through the Nairobi Water and Sewerage Company	90% Note: This could not be achieved at 100% because of complications with performing constructions at the one informal school involved in the program.

4.2.2 Attendance/Participation

Program attendance was not recorded per activity or session, but was instead tracked by general school attendance rate over the duration of the program. Since many program activities were of an external resource and capacity building nature, and since a large majority of the information dissemination was done in a peer-to-peer education format once the SHCs had been established and trained, tracking exact attendance and participation was not possible. School attendance rates for schools selected for program evaluation are listed below (Table 5). The nearly 90 percent average attendance rate over the two-year program period indicates that during all program activities at school sites, the vast majority of students were in attendance and were therefore exposed to program information, education, and resources.

The lowest average attendance per school records was 75.5 percent at Uhuru Gardens, however this school had a 100 percent SHC meeting attendance record, indicating that the gateway to exposure of students was operating at the highest level. Schools reporting 100 percent average attendance did provide the school records as evidence for this, however due to the nature of the attendance averaging formula and the low quality of hand-written records and the general class attendance recording process, it is possible that these schools did not actually have

consistent 100 percent attendance. Consistent 100 percent attendance in the areas of program operation is very unlikely. Per program operations, attendance at school during the day of an SHN information session or program activity necessarily means that attendance at and exposure to that activity was had. Therefore average school attendance rate is a proxy for SHN program activity average attendance.

Table 5: Average attendance rate of sampled program schools

PRIMARY SCHOOL	ATTENDANCE RATE
KIRIRI	82.4%
GITUTHA	91.9%
GITHUNGUCU	87.6%
RWAMBURI	91.3%
GATUURA	88.8%
MARIAKANI	88.3%
UHURU GARDENS	75.5%
MWANGAZA	100.0%
KAYOLE 1	94.0%
RONALD NGALA	100.0%
USHIRIKA	94.2%
KAMITI	85.0%
EMBAKASI	83.2%
TUMAINI	95.1%
TIEKUNU	86.7%
TOTAL AVERAGE	**89.6%**

4.2.3 Definition of what constitutes exposure

For this endline evaluation, exposure was defined on an individual level as enrollment in a program school. While this definition may include students who missed exposure to certain activities or elements of the program, the program was so pervasive and ubiquitous at program schools through permanent infrastructure, ongoing promotion, continuous advertising, consistent activities, and regular teachings, both from teachers and SHC peer educators. Since It was not possible to sample the same students at baseline and endline due to the heavily fluctuating nature of individual attendance and enrollment, as well as the length of Phase II of the program and the graduation of a large cohort of the students from both the SHC and the primary school, regular

enrollment at and attendance of the program school during Phase II and its corresponding activities constitutes exposure, and therefore, eligibility for inclusion in the endline evaluation.

4.3 Characteristics of Endline Participants

The data collected for this evaluation consists of 420 completed quantitative student questionnaires administered between June 15, 2015 and June 23, 2015. Of the 420 students that were sampled for the endline evaluation, all 420 students responded adequately which translates to a 100 percent response rate. The high response rate can be attributed to the questionnaire design, timing and completion of program activities, and mobilization through pre-evaluation contact with the schools.

The comprised students came from 15 program schools that were randomly selected after stratification by location for proper enrollment representation. Students were then systematically selected from standards 6 and 7 after stratification by gender and SHC enrollment status to ensure proper representation of these important attributes for analysis. Of the 420 sampled students, 211 were male and 209 were female, determined by administering enumerators' determination with student confirmation by choosing from a written list of gender options.

While all students came from either standard 6 or standard 7, the age range was from ten to 18 years due to the local commonality of delayed entry into school, failure to pass classes, and dropouts followed by reenrollment (Table 6). Of note, 35.4 percent of students were aged 12 years, with 26.2 percent age 13 and 19.7 percent age 11, and a mean age of all participants of 12.4 years old.

Table 6: Characteristics of endline participants													
Gender (n=420)		***Age (n=412)***						***Standard Level (n=419)***		***SHC (n=418)***		***Type of School (n=420)***	
Male	*Female*	*10*	*11*	*12*	*13*	*14*	*15+*	*6*	*7*	*Yes*	*No*	*Rural (Kiambu)*	*Urban (Nairobi)*
211	209	12	81	146	108	40	25	213	206	148	270	132	288
50.2%	49.8%	2.9 %	19.7 %	35.4 %	26.2 %	9.7 %	6.1 %	50.7 %	49.1 %	35.2%	64.3%	31.4%	68.6%

One hundred forty eight (35.2 percent) students sampled were members of the program-created School Health Clubs, with the remaining 270 designating status as not belonging to a School Health Club. A high percentage of SHC members was intentionally sampled for this evaluation in order to somewhat reflect the true proportion of SHC members in program schools, but also to acquire sufficient data with which to perform sub-analysis on the effectiveness of being a SHC member versus receiving the peer-to-peer education received by non-SHC members.

As previously noted, 31.4 percent of students (132 students) were from rural Kiambu schools, and 68.6 percent (288 students) were from urban Nairobi schools. This split was due to both the proportion of program students from the two areas and to match the baseline evaluation, which consisted of 65.6 percent of students surveyed from Nairobi and 34.4 percent from Kiambu.

4.4 Findings

The endline evaluation aimed to evaluate the success of Phase II of the SHN program by assessing it's ability to meet goals, sub-goals, and objectives, as well as baseline targets set by the donor and the organization. The endline evaluation used results from the student questionnaires and the school observation surveys to determine statistically significant increases or decreases from baseline to endline for all result indicators laid out at the beginning of the program. The following results section additionally presents changes in knowledge, behaviors,

and attitudes (KAP) of the program schoolchildren over the course of the program. While these changes cannot imply direct impact because of a lack of official comparison group due to funding and organizational limitations outside the scope of this evaluation, they do provide insight as to potential effects of program activities and provide Save the Children direction for future programs in the region. The evaluation data were also used to statistically analyze differences between demographic groups of exposed schoolchildren in terms of knowledge and behavior, notably focusing on the SHC members and the corresponding peer-to-peer education, as well as the location of the school (rural or urban). Particular attention was paid to WASH results, as WASH was the main general focus of Phase II, and oral health was also dissected further at the request of the donor, Wrigley.

4.4.1 Baseline results

Baseline results revealed indicator starting points and provided reference for indicator targets for the endline evaluation (Table 7). 393 students were sampled for the baseline evaluation survey. Since there was not a direct pre-test and post-test given for evaluation, the student questionnaire questions were analyzed for baseline versus endline and also used as pathways to determining indicator results. Indicators were determined for the goal, the sub-goal, and all four objectives. Key results are based on both student knowledge and behavior measured via the student questionnaires, as well as teacher questionnaires for school-level indicators and direct observations done by evaluation staff for facility and behavior indicators. The baseline indicator findings were used to create the target endline numbers, which are also recorded in the table.

Table 7: Program indicators and baseline results		
RESULT INDICATOR	**BASELINE**	**TARGET**
Goal: Improved health and educational status of school-age children		
Education Status		
Student attendance rate	**85%**	**92%**
Health Status		
% of children with reported diarrhea episode in past 2 weeks	**45%**	**35%**
Sub-Goal: Improved practices and behaviors, and use of key school-based health and nutrition services		
% of children who report brushing teeth at least twice/day	**48%**	**80%**
% of children observed washing hands with soap after using latrines	**40%**	**50%**
Objective 1*:* Increased availability of school-based health, hygiene, and nutrition services		
% of children dewormed	**90%**	**97%**
% of children in kindergarten supplemented with Vitamin A	**90%**	**97%**
Objective 2: Improved quality of the school environment		
% of schools with access to safe drinking water (2 liters/child/day of chlorinated water)	**40%**	**85%**
% of schools with 'sufficient' hand-washing facilities with soap (or suitable alternative) and water	**60%**	**85%**
% of schools with access to improved latrines, separate for girls, boys, and teachers	**60%**	**70%**
Objective 3: Improved knowledge and attitudes toward using health services and protective behaviors		
% of children who can indicate causes of dental carry/decay	**62%**	**75%**
% of children who know that they should brush their teeth every day to maintain healthy teeth and gums	**75%**	**80%**
% of children who know the key times when they should wash hands with soap	**85%**	**90%**
% of children who report usually washing their hands with soap and water before eating/after using the toilet	**35%**	**50%**
% of children who know that using latrines can prevent the spread of diarrhea, diseases, and worms	**62%**	**100%**
% of children who know that smoking is harmful to their health	**98%**	**100%**
% of schools with at least 1 teacher trained in and teaching health education and oral health	**100%**	**100%**
% of schools with active health clubs	**100%**	**100%**
% of schools who have discussed health in parents' forums at least 3 times per year	**100%**	**100%**
Objective 4: Improved policy environment for SHN and community support for SHN		
% of schools with active community support of health activities	**78%**	**83%**
% of schools with improvement plans including SHN activities	**67%**	**77%**
% of schools that achieved 1 or more health objectives listed in their development plans	**50%**	**61%**

Specifically of note were the student questionnaire WASH question results. During baseline, 70.8 percent of students knew to wash their hands before eating and 85 percent knew to wash their hands after using the toilet. Further, 70.6 percent of students at the beginning of Phase

II of the program believed that increased handwashing with soap is key to a healthy child in school, with 69.1 percent and 61.5 percent naming drinking treated water and using clean toilets, respectively. These results provided the basis for WASH-focused activities during Phase II's two years.

The baseline results found that "what children and adults do—their behaviors—creates successful WASH in Schools" (18). At baseline, it was found that the school-based sanitation promotion in place at that time was insufficient to change that behavior of the schoolchildren. Further, it was assessed that the current latrines at the majority of program schools needed improvement and that close work with the school management committees (SMC) was necessary to identify locations for new construction, design infrastructure, and create functional water supply systems. Lastly, baseline found a lack of funds specifically for the maintenance and cleanliness of sanitation infrastructure, as well as a lack of acknowledgement among teachers and administrators about the importance of clean sanitation facilities and how those enhance and support child behavior.

4.4.2 Endline results and analysis

4.4.2.1 Indicators (Table 8)

Table 8: Program indicators with endline measures

RESULT INDICATOR	BASELINE	TARGET	ENDLINE	DETAILS
Goal: Improved health and educational status of school-age children				
Education Status				
Student attendance rate	**85%**	**92%**	**89.6% (+#)**	Target not meant, but statistically significant positive change seen.
Health Status				
% of children with reported diarrhea episode in past 2 weeks	**45%**	**35%**	**28.8% (+#)**	TARGET MET
Sub-Goal: Improved practices and behaviors, and use of key school-based health and nutrition services				
% of children who report brushing teeth at least twice/day	**48%**	**80%**	**61.2% (+#)**	A literature review revealed that around 61% of schoolchildren in Nairobi have been found by previous studies to brush teeth at least twice a day with intervention (57). The endline target set at baseline seems like an

				outlier.
% of children observed washing hands with soap after using latrines[1]	**40%**	**50%**		
Objective 1: Increased availability of school-based health, hygiene, and nutrition services				
% of children dewormed	**90%**	**97%**	**97.1%** **(+#)**	TARGET MET
% of children in kindergarten supplemented with Vitamin A	**90%**	**97%**	**46.3%** **(-#)**[2]	The government partner delayed and ultimately did not provide Vitamin A supplements. The joint SCI and government supplementation did not take place. Vitamin A supplementation occurred in some program schools through projects by other NGOs.
Objective 2: Improved quality of the school environment				
% of schools with access to safe drinking water (2 liters/child/day of chlorinated water)	**40%**	**85%**	**40%** **(=)**	Kiambu schools (15 of 25 program schools) do not have access to treated water from the City County because of their rural nature. Further, the policy to provide choline to rural schools has not been followed through by the government, and the schools do not have the funds to treat water themselves.
% of schools with 'sufficient' hand-washing facilities with soap (or suitable alternative) and water	**60%**	**85%**	**26.7%** **(-#)**	100% of schools had functioning hand-washing facilities because of the success of SCI Phase II activities, however the majority were unable to consistently provide soap because of lack of funds and resources.
% of schools with access to improved latrines, separate for girls, boys, and teachers	**60%**	**70%**	**80%** **(+)**	TARGET MET
Objective 3: Improved knowledge and attitudes toward using health services and protective behaviors				
% of children who can indicate causes of dental carry/decay	**62%** **62%**	**75%** **75%**	**84.6%** **(+#)** **66.6%** **(+)**[3]	TARGET MET
% of children who know that they should brush their teeth every day to maintain healthy teeth and gums	**75%**	**80%**	**88.6%** **(+#)**	TARGET MET
% of children who know the key times when they should wash hands with soap	**85%**	**90%**	**86.8%** **(+)**[15]	Students were asked to think of the key times on their own without any guidance or leading. So, while the target was not met, 86.8% is extremely successful for a free response format.
% of children who report usually washing their hands with soap and water before eating/after using the toilet	**35%**	**50%**	**81.2%** **(+#)**[16]	TARGET MET
% of children who know that using latrines can prevent the spread of diarrhea, diseases, and worms	**62%**	**100%**	**79.5%** **(+#)**	Nearly all children report knowing that it is necessary to use latrines to maintain good health, but

[1] Did not perform observations of handwashing.
[2] 46.3 is percent of students. Percent of sampled schools with supplemented classes is 7 of 15, or 46.7%.
[3] 84.6% indicate cause of eating sugar foods. 66.6% indicate cause of not brushing teeth.
[15] Knew at least 2 out of the 4 key times to wash hands with soap.
[16] Reported washing after last time eating or using the toilet.

				some failed to identify specifically the stated reasons why.
% of children who know that smoking is harmful to their health	**98%**	**100%**	**97.4%** **(-)**	While the target was not met, it was not feasible to assume that 100% of students would have knowledge of the harmfulness of smoking, especially because many of the program schools are in rural areas where there is less innate knowledge about smoking's harm. 97.4% is still a very significant majority.
% of schools with at least 1 teacher trained in and teaching health education and oral health	**100%**	**100%**	**100%** **(=)**	TARGET MET
% of schools with active health clubs	**100%**	**100%**	**93.3%** **(-)**	All schools have established school health clubs, but one only meets when needed and is therefore not regularly active.
% of schools who have discussed health in parents' forums at least 3 times per year	**100%**	**100%**	**80%** **(-)**	100% of schools discuss health in parents' forums, but 3 of the 25 schools only discuss once or twice per year.
Objective 4: Improved policy environment for SHN and community support for SHN				
% of schools with active community support of health activities	**78%**	**83%**	**60%** **(-)**	Community support is highly variable and therefore it is not a surprise that the percentage decreased from baseline to endline. More effort needs to be put into strengthening the community connection.
% of schools with improvement plans including SHN activities	**67%**	**77%**	**67%** **(=)**	Head teachers were asked to identify school improvement plan activities in a free response format. Schools were only marked as having plans that included SHN activities if teachers mentioned SHN activities. It is possible that SHN activities are listed in the plans but were not disclosed by the teachers.
% of schools that achieved 1 or more health objectives listed in their development plans	**50%**	**61%**	**100%** **(+#)**	TARGET MET
+# : positive, significant change **+ : positive, not significant change** **-# : negative, significant change** **- : negative, not significant change** **= : no change**				

4.4.2.2 Explanation of results for goals and objectives

Chi-square tests of homogeneity were performed in SAS to test the equality of the proportions obtained from the independent samples taken before and after implementation of Phase II of the SHN program. The baseline report for Phase II yielded percentages for each indicator, gathered from a survey administered to a sample of 393 students from 15 selected

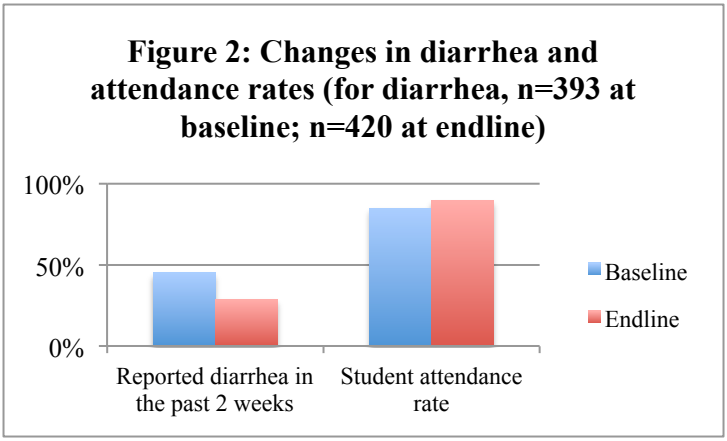
program schools. This data was used to find the proportion of students with the knowledge or behavior measured by each indicator. Each proportion was then compared to the raw data proportions gathered from the corresponding endline evaluation questions. The chi-square test examines the statistical equality between proportions from two different populations on the same question or indicator. In this case, the two different populations are the sampled students from the Phase II baseline and the sampled students from the Phase II endline. For these chi-square tests of proportions, the null hypothesis is that there is no statistical difference in the proportions. In this case, that would mean that the change in indicator result between before and after Phase II, whether negative or positive, is not a statistically significant change. In contrast, the alternative hypothesis is that the two proportions are not equal, and therefore the change observed in the indicator result is statistically significant meaning that the program either had a statistically positive or statistically negative effect on the outcome.

There were unfortunately some unavoidable limitations with the endline evaluation that may have affected some of the results obtained by the significance tests. These discrepancies will be explained in detail in the following sections of this report.

Goal

The overall goal of the SHN program was improved educational and health status of school-age children. Two indicators were established in an attempt to generally measure the success of this goal, in addition to more detailed objective-specific indicators. For the SHN program and this evaluation, educational status was determined by attendance rate of children in schools. This indictor is fitting because poor child health is a leading reason for higher absentee and dropout rates, particularly in Sub-Saharan Africa. Kenya, specifically, has historically had

problems with the cyclical issue of poor child health followed by less schooling followed by worse future health.



The baseline average attendance rate at sampled program schools was 85 percent. The targeted increase was to 92 percent, a seven-point jump. Like baseline two years prior, the endline evaluation measured attendance rate per school and then averaged all sampled schools' rates. This was done by taking total enrollment at the beginning of the school year and comparing to attendance per official registers on two randomly selected school days during the school year. These two days of attendance were then averaged to find the average attendance rate at each individual school. This process adjusted for any potential outlier days while also getting a true accurate estimation of what attendance would be on an "average" school day at an "average" program school. The endline attendance rate was 89.6 percent (Figure 2). The enrollment total for the schools sampled at endline was 13,387, with a range of 310 students to 2,252 students per school. The increase from 85 percent was found to be statistically significant, as the p-value of the chi-square test was less than 0.05. Therefore, despite not reaching the goal of 92 percent, Phase II of the SHN program saw a statistically significant increase in attendance rate, as averaged across all sampled program schools.

Overall health status of children was examined with the indicator of reported diarrhea within the past two weeks. This fitting indicator was chosen because of the program's heavy focus on WASH and nutrition, both of which crucially impact the incidence of diarrhea and similar water-borne and sanitation-related diseases. Explicitly, more than 40 percent of diarrhea

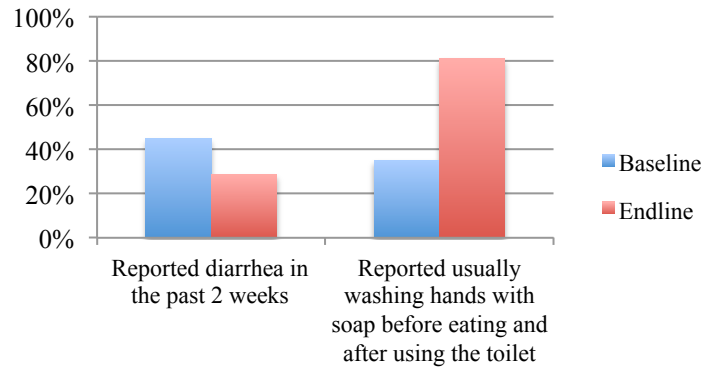
cases in schoolchildren result from transmission in schools rather than at home (35). Further, it has been found that in Kenya, "attendance rates are affected by health factors including the impact of…[common] diseases" (6) such as those leading to diarrhea, with poor attendance leading to higher dropout rates and worse overall community and country education. Inadequate water, poor sanitation, and poor hygiene are the causes of frequent absenteeism particularly in more disadvantaged areas such as the ones targeted by the program. Baseline found that 45 percent of students sampled reported a diarrheal episode within the two weeks prior to sampling, with a goal of reducing that number to 35 percent by endline. The endline evaluation found a reported percentage of only 28.8 percent (Figure 2). This result not only surpassed the target, but was also found to be statistically significant from the baseline per the chi-square test (95% CI: 1.50 to 2.71; p-value <0.0001). As indicated in the figure, these two results are an extremely positive sign that the SHN program had a positive effect on the overall health of the targeted schoolchildren.

Sub-Goal

The Save the Children program's overall sub-goal was improved practices and behaviors, along with the use of school-based health and nutrition services. The corresponding indicators at baseline were reported teeth brushing behavior and observed handwashing behavior. Due to limited resources, including time and funds available, it was not feasible for the endline evaluation to conduct proper, reliable observation of handwashing practices at each sampled school. However, handwashing practices were reported by students, and a correlation was found between those children who reported washing their hands after using the toilet and those who reported not having diarrhea two weeks before being surveyed (Figure 3). There is a correlation

between the increase in the proportion of students reporting handwashing with soap and a decrease in the number of diarrhea cases.

Figure 3: Changes in diarrhea and reported handwashing rates (n=393 at baseline; n=420 at endline)



Further, teeth brushing practices were reported from the students sampled at endline. Baseline found that 48 percent of students brush their teeth at least twice per day, with an ambitious endline target of 80 percent. The endline evaluation found that only 61.2 percent of students sampled report brushing their teeth at least twice per day. Around 50 percent of those sampled at endline reported brushing twice a day, while just over 11 percent reported brushing more than twice a day. The other 38.2 percent reported brushing once a day, every other day, once a week, rarely, or never. Although the endline target was not met, likely due to it being set an overly ambitious outlier level by baseline staff, the increase in the proportion of students who reported brushing their teeth at least twice a day was found to be statistically significant. This is a critical finding for the program, as the donor continually emphasized oral health throughout the duration.

Objective 1: Increased availability of school-based health, hygiene, and nutrition services

The first program objective looked at increased availability of services, with indicators revolving around deworming and Vitamin A supplementation. At baseline, 90 percent of students sampled had been dewormed, with a target endline of 97 percent. The endline found that 97.1 percent of students had been dewormed, which not only met the target, but was also found to be statistically significant (95% CI: 0.14 to 0.52; p-value <0.0001). This result was found

despite the program not meeting its deworming activity goal over the course of the program. This could be due to external influences, such as other NGOs specifically targeting deworming of schoolchildren without the express help and resources of the Kenyan government.

However, the percentage of children in early child development classes (ECD), akin to kindergarten, supplemented with Vitamin A dropped from 90 percent to 46.3 percent. This statistically significant drop (95% CI: 7.85 to 13.81; p-value <0.0001) can be attributed to the fact that Phase II of the program was unable to perform supplementation as scheduled because of a lack of follow through on behalf of government officials responsible for obtaining and supplying the Vitamin A supplements. Save the Children adequately attempted to work in conjunction with these government stakeholders, but poor communication and the absence of true motivation on behalf of the government officials led to failures in this regard.

Objective 2: Improved quality of the school environment

Objective 2 focused on the school environment with indicators assessing access to safe drinking water, sufficient hand-washing facilities with soap, and suitable latrines. The first indicator measured the percent of schools with access to safe drinking water, defined as at least two liters of chlorinated water per child per day. Baseline found that 40 percent of schools had access to safe drinking water, with endline finding the same result, 40 percent. This means that there was no change, positive or negative before and after the program (p-value 1). The target endline was 85 percent, which was a very ambitious increase. This optimism was likely due to certain program activities revolving around installing new water tanks in schools. However, despite water tank installation, many of the schools still do not have the ability to treat the water they collect and store with chlorine, and those that do have chlorinated water rely on the water pumped from the city, which often is not consistently supplied. Further, although there are

alternative ways to acquire chlorine or treated water, such as sourcing from local health clinics, there is often a lack of prioritization, operations planning, and maintenance ability at the school level, which hinders the usefulness of these other options. It is often more about a functional ownership system within schools and also outside engagement with and commitment by community partners that is the issue rather than the access to chlorine itself. Chlorine supplementation from the government is an ongoing problem in Kenya, as the government has pledged its help in constant provision of this resource, however has continually failed to follow through, resulting in unexpected difficulties for interventions such as the SHN program.

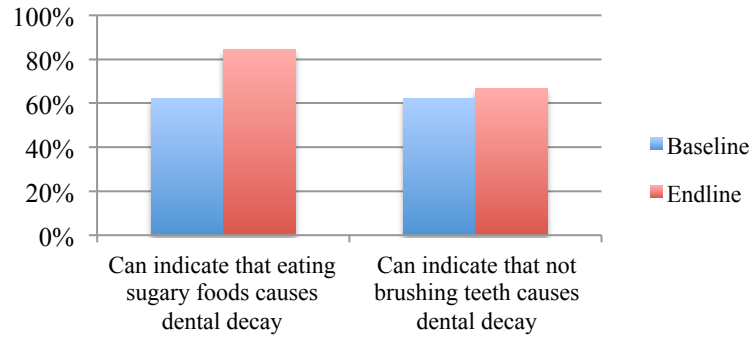
The second indicator for Objective 2 measured the percent of schools with sufficient handwashing facilities, which includes both running clean water and soap. The baseline evaluation found that 60 percent of sampled schools had sufficient facilities and the target endline was set at 85 percent. Again, this target was ambitious, but was likely due to the projected program activities of providing handwashing stations to program schools. However, the endline evaluation found that only 26.7 percent, or four out of 15, sampled schools, had sufficient facilities. This negative change in proportions was statistically significant at the five percent level (p-value 0.04) and indicates a serious true change in number of schools with sufficient facilities. This number was dramatically low, not because of failure of the program to provide the handwashing stations, but because soap was not available at the large majority of schools when the endline evaluation was conducted. While this number may have improved since that time due to the creation of WASH maintenance monitoring plans at program closeout workshops, the absence of forethought regarding the consistent availability of soap exemplifies the need for sustainability strategies to be administered starting from program inception.

The third indicator for Objective 2 measured the percent of schools with "improved" latrines, separate for boys, girls, and teachers. "Improved" latrines are defined as those that ensure hygienic separation of human excrement from human contact (58). These include flush toilets that have functional holding tanks for flushing water as well as pit latrines given that they have either a solid slab of concrete, logs with mud, or cement that fully covers the pit without exposing its contents other than through the squatting hole (58). Baseline for this indicator was 60 percent, with a target endline of 70 percent. The endline evaluation found that 80 percent of sampled schools had "improved" latrines, which, although not technically statistically significant (p-value 0.28), surpassed the target goal. All schools sampled had clearly separate latrines for boys, girls, and teachers.

Objective 3: Improved knowledge and attitudes toward using health services and protective behaviors

The first indicator of Objective 3, which focused on improved knowledge and attitudes toward behavior change, is the percent of children who can indicate causes of dental caries. Oral health was a focal point of Phase II of the SHN program due to the nature of the donor company Wrigley. The main causes of dental caries were determined to be eating sugary foods or drinks and not brushing teeth. Baseline found that 62 percent of sampled students could indicate these causes, with a target endline of 75 percent. For the endline evaluation, the causes were measured independently, with

Figure 4: Changes in oral health knowledge (n=393 at baseline; n=420 at endline)



84.6 percent indicating the cause of eating sugary foods or drinks and 66.6 percent indicating not brushing teeth regularly (Figure 4). Both of these endline results were above baseline, with eating sugary foods or drinks being both above the target and statistically significant per the chi-square test (95% CI: 0.21 to 0.42; p-value <0.0001). The endline proportion for not brushing teeth regularly was below target and not found to be statistically significant (95% CI: 0.61 to 1.09; p-value 0.17), however there was still an increase from baseline, which is a positive sign for the education provided by the SHN program.

The second indicator of the third objective is the percent of children who know that they should brush their teeth every day to maintain healthy teeth and gums. Baseline found that 75 percent of sampled students knew this, with a target of 80 percent. The endline evaluation found that 88.6 percent of sampled students could identify this piece of information, which exceeded the target and was found to be statistically significant (95% CI: 0.26 to 0.57; p-value <0.0001).

The next indicator is the percentage of students who know the key times when they should wash their hands with soap. Four key times were identified: before eating or preparing food, after using the toilet, after playing or being in dirt, and after handling babies or diapers. Respondents were recorded as knowing these key times if they could identify at least two of the times. This threshold was determined in order to stay consistent with the methodology of the baseline assessment. Baseline recorded 85 percent of students sampled as meeting the indicator, with a target of 90 percent. The endline evaluation found that 86.8 percent of sampled students met the indicator threshold, which although a positive change from the baseline, was not found to be statistically significant (95% CI: 0.58 to 1.29; p-value 0.47) and did not meet the target goal.

The percent of children who report usually washing their hands with soap and water before eating and after using the toilet was measured by children's report of what behavior they performed the most recent time before eating or after using the toilet. This methodology was again used to be consistent with how the baseline assessment was conducted. Baseline found that 35 percent of students sampled washed their hands with soap and water, with an endline target of 50 percent. The endline evaluation found that 81.2 percent of students sampled washed their hands with soap after the last time they used the toilet or before the last time they ate. This figure greatly exceeded the target and was found to be statistically significant (95% CI: 0.09 to 0.17; p-value <0.0001) per the chi-square test. This is a very good indication that the SHN program succeeded in contributing to a handwashing behavior change, as a 46.2 percent jump cannot be explained as just growth over time. While this change seems to contradict the finding that only 26.7 percent of schools had sufficient handwashing stations with soap, it is possible that the children have access to soap at home and were reporting the last time they washed their hands at home instead of at school. In addition, it is also possible that there was a response bias or a social-desirability bias by which the children over-reported good behavior (i.e., using soap) because they possess the knowledge that that is what they should be doing. Because of these potential disconnects, there is likely still a gap between knowledge and behavior.

The percentage of children who know that using latrines to defecate can help prevent the spread of diseases, diarrhea, and worms is the next indicator of Objective 3. Baseline found that 62 percent of students sampled knew this, with an endline target of 100 percent. The endline evaluation found that 79.5 percent knew this, which was a statistically significant increase per the chi-square test despite not meeting the unrealistic target number. The endline evaluation mimicked baseline procedure and measured this indicator by how many students could state that

one reason for using latrines was the prevention of any one of the three issues listed. Further, during focus group discussions with sample groups of students, this concept was discussed and qualitative analysis shows that nearly 100 percent of students knew that using latrines prevented disease when asked in a more traditional "yes or no" format.

The next indicator focused on the percentage of schoolchildren who know that smoking is harmful to health, and it was measured by asking students if they thought that smoking was good, bad, or okay. During baseline, 98 percent of students sampled indicated that smoking is bad for health using this line of questioning. The target endline was 100 percent, and the measured endline result was 97.4 percent. While this was a slight decrease from baseline, it was not a statistically significant difference (95% CI: 0.52 to 3.57; p-value 0.52), so the hypothesis that the before and after proportions were statistically the same could not be rejected. Therefore, although the target was not reached, the high knowledge among students remained steady throughout the program, and the failure to reach 100 percent is likely due to students who are alternatively influenced by members of their household or community, as smoking is very common in poor and rural areas of Nairobi and Kiambu.

One activity goal of the whole four-year SHN program was to train at least one teacher per school in teaching health education, including WASH and oral health. The percentage of schools with such a teacher at Phase II baseline was 100 percent because Phase I had achieved its goal of initial training. Phase II also achieved the goal, with 100 percent of schools sampled having at least one teacher who was either newly trained or re-trained to expand and solidify knowledge. This finding met the target and indicates a success for that activity of Phase II of the program as well (p-value 1).

Another activity goal of Phase II of the program was to continue the activity of the School Health Clubs that were created in Phase I. The percent of schools with active health clubs at baseline was 100 percent, with a goal of continued complete success. The endline evaluation found that 93.3 percent, or 14 of 15 schools sampled, had active school health clubs. "Active" was defined as meeting at least once a term, with the one school with an SHC not up to par only meeting "when necessary". While this does not meet the continued 100 percent target, the decrease is not statistically significant (p-value 0.29), and it is important to note that all schools sampled currently have established SHCs, whether "active" or not.

The last indicator of Objective 3 is the percent of schools that discuss health in parents' forums at least three times per year. Baseline found that 100 percent of schools sampled met this indicator, with a target to continue at 100 percent. The endline evaluation found a decrease to only 80 percent of sampled schools that discussed health at least 3 times with parents. While this decrease is not statistically significant at the 5 percent threshold (p-value 0.06), it does show room for improvement in parent involvement in SHN, which is a common theme of this evaluation.

Objective 4: Improved policy environment for SHN and community support for SHN

Objective 4 of the program focused on policy and community support. The first indicator is the percent of schools with active community support for health activities. Baseline found that 78 percent of schools had support, with a target endline of 83 percent. This was measured via a questionnaire administered to the head teacher or the SHC patron asking if they received community support for SHN activities. The methodology was replicated at endline, and only 60 percent of head teachers sampled reported that they were still currently receiving community support for health activities. This decrease from baseline, although not statistically significant (p-

value 0.37), indicates that more needs to be done to advocate community involvement in health at schools, another common problematic theme discovered through this evaluation.

Further, it was assessed whether or not sampled schools had improvement plans that included SHN activities. Baseline found that 67 percent of sampled schools did, with an endline target of 77 percent. This was measured by asking head teachers for either copies of school improvement plans or for major activities that were included in the most recent plans. The endline evaluation used this same system and also found that 67 percent of schools had improvement plans with SHN activities, which did not meet the target but was on par with baseline (p-value 1). This indicates that the program kept up the importance of SHN being included in school improvement, but it did not necessarily increase its importance at schools that did not highlight it before Phase II activities.

The final indicator is the percentage of schools that achieved one or more of the health objectives listed in their school development plan for the previous year. Baseline found that 50 percent of sampled schools achieved one health development objective, with an endline target of 61 percent. The endline evaluation found that all sampled schools (100 percent) achieved at least one health development objective per the head teacher or the SHC patron. This is a statistically significant increase (p-value 0.002) per the chi-square equality of proportions test and is a huge indication that the Save the Children SHN program improved schools' abilities to complete their stated and desired health developments. Additionally, it is likely that after the first phase of the program, schools established greater numbers of and more detailed health objectives in their school development plans because of the exposure and increased focus on health issues due to the intervention.

4.4.3 Changes from baseline to endline

Results of selected questions from the baseline and endline student questionnaire were analyzed including the change in percentage of students who answered the question correctly, as well as the significance levels of the changes (Table 9). Answers' "correctness" was determined by the desired knowledge or behavior based on the SHN curriculum, activities, and stated goals and objectives. The desired knowledge, attitude, or behavior is indicated in the table in the second column, as some questions from the questionnaire tool were converted in the table to make clear exactly what answer percentage is being reported. The questions whose results are reported below were worded identically during both baseline and endline. The questions from the endline questionnaire whose results are not reported in the below table were mostly added for endline only and were not asked at baseline. Questions on certain topics were added for the endline evaluation at the request of the donor and Save the Children for various other reasons, but are not used in this comparison because they were not focused on at baseline. Statistically significant changes are bolded in the last column.

Table 9: Results of selected student questionnaire questions (n=393 at baseline; n=420 at endline)

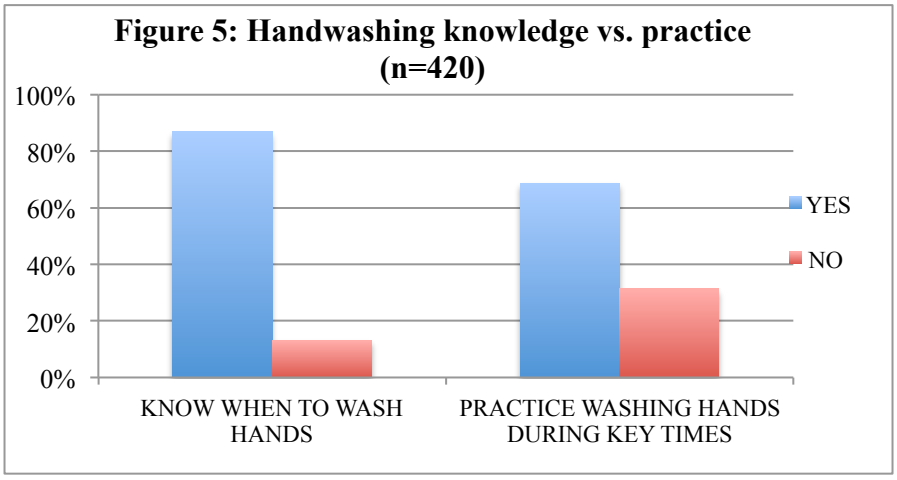
Related Question Number	Question conversion	Behavior, knowledge, or attitude	Topic	Baseline Percent	Endline Percent	Change
2.10	Brush teeth at least twice a day	Behavior	Oral Health	48.4%	61.2	**+12.8%**
2.11	Use toothbrush/twig and toothpaste	Behavior	Oral Health	93.0%	90.0%	-3.0%
2.12	Can proper demonstrate steps to brush teeth	Behavior	Oral Health	81.7%	83.3%	+1.6%
2.14	Knows causes of a dental carry:	Knowledge	Oral Health			
	Not brushing teeth			62.0%	66.6%	+4.6%
	Eating sugary foods			62.0%	84.6%	**+22.6%**
2.16	Knows why it is important to brush teeth:	Knowledge	Oral Health			
	To remove bacteria			25.0%	58.6%	**+33.6%**
	To maintain healthy teeth			75.0%	88.6%	**+13.6%**

3.11	Reported washing hands at proper times (before eating or after using the toilet)	Behavior	WASH	35.0%	81.2%	**+46.2%**
3.12	Knows the proper times to wash hands: Before eating After using the toilet	Knowledge	WASH	 70.8% 85.0%	 93.8% 84.1%	 **+23.0%** -0.9%
3.13	Uses soap and water when washing hands	Behavior	WASH	76.0%	81.2%	+5.2%
4.11	Knows why it is important to have safe water	Knowledge	WASH	69.1%	99.3%	**+30.2%**
5.10	Have not had diarrhea in the past two weeks	Behavior	WASH	55.0%	71.2%	**+16.2%**
5.11/5.12	Pooped in toilet last time went: At school At home	Behavior	WASH	 96.9% 89.6%	 96.9% 99.5%	 0.0% **+9.9%**
5.13	Knows why it is important to poop in toilet	Knowledge	WASH	61.5%	79.5%	**+18.0%**
5.15	Knows washing hands after using toilet will prevent diarrhea spread	Knowledge	WASH	85.0%	62.9%	**-22.1%**
6.10	Believes that smoking is harmful	Attitude	Other	98.3%	97.4%	-0.9%
7.10	Knows about HIV	Knowledge	Sexual Health	95.0%	99.3%	+4.3%
7.13	Knows you can prevent HIV spread through: Abstinence Using condoms Not sharing needles	Knowledge	Sexual Health	 79.3% 5.0% 79.3%	 73.6% 8.1% 65.2%	 **-5.7%** +3.1% **-14.1%**
7.14	Knows you can't tell if someone has HIV by looking at them	Knowledge	Sexual Health	87.5%	85.0%	**-12.5%**
8.10	Believes that there is a students' role to play in SHN at school	Attitude	General	78.0%	81.4%	+3.4%
8.11	Believes that SHN contributes to academic performance	Attitude	General	68.5%	74.1%	**+5.6%**
8.12	Believes that SHN at school: Excellent or good Average or poor	Attitude	General	 79.2% 20.8%	 79.5% 20.3%	 +0.3% -0.5%
8.13	Has been dewormed (within last year)	Behavior	Other	90.0%	97.1%	**+7.1%**
9.13	Has not missed school because of menstruation in past three months	Behavior	Sexual Health	79.0%	86.7%	**+7.7%**
9.16	Use disposable sanitary pads	Behavior	Sexual Health	70.0%	78.7%	**+8.7%**

4.4.4 WASH-specific results

Because of the focus of Phase II on WASH education, activities, and infrastructure, and due to the importance of WASH in Kenya and specifically in the program region, WASH results are highlighted in this evaluation. Potential correlations were explored between knowledge and behavior changes, as well as the correlation between observed WASH resources and infrastructure provided by the program and certain schoolchildren results.

Out of the total survey participants, 86.8 percent of the students had adequate knowledge of the key times of when to wash their hands. However, only 51.9 percent of the students reported washing their hands with soap before eating the day before, 35.4 percent after visiting the toilets, 12.1 percent after handling the dirt outside, and 0.7 percent after handling babies or diapers (the four key times). Although a majority of the children had adequate knowledge on handwashing practices (86.8 percent), only 68.7 percent consistently practiced handwashing with soap during at least one of the required key times the day before (Figure 5). This is an extremely relevant finding, as it shows there is still a clear divide between knowledge and behavior change, even at program endline, and that there is still room for improvement on the life skills education that will translate information into action.



There was no statistically significant correlation between those schools with functional handwashing facilities with soap and students who reported practicing handwashing at key times,

which further shows that, even when the resources are provided, knowledge is not yet necessarily translating into action.

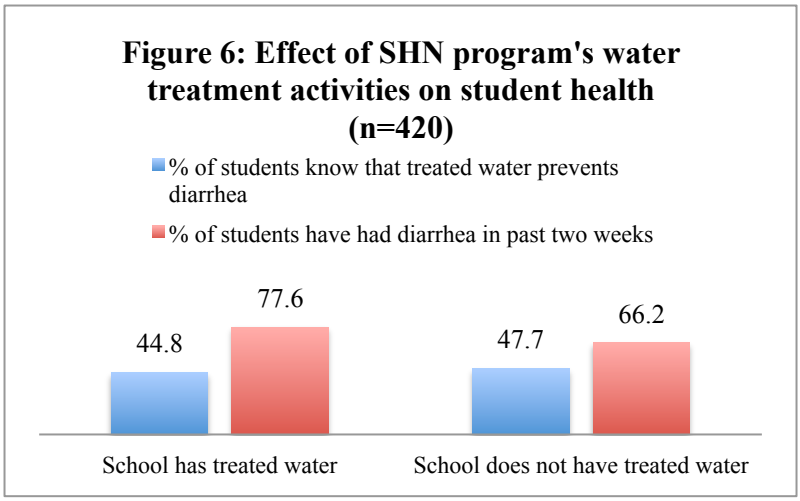


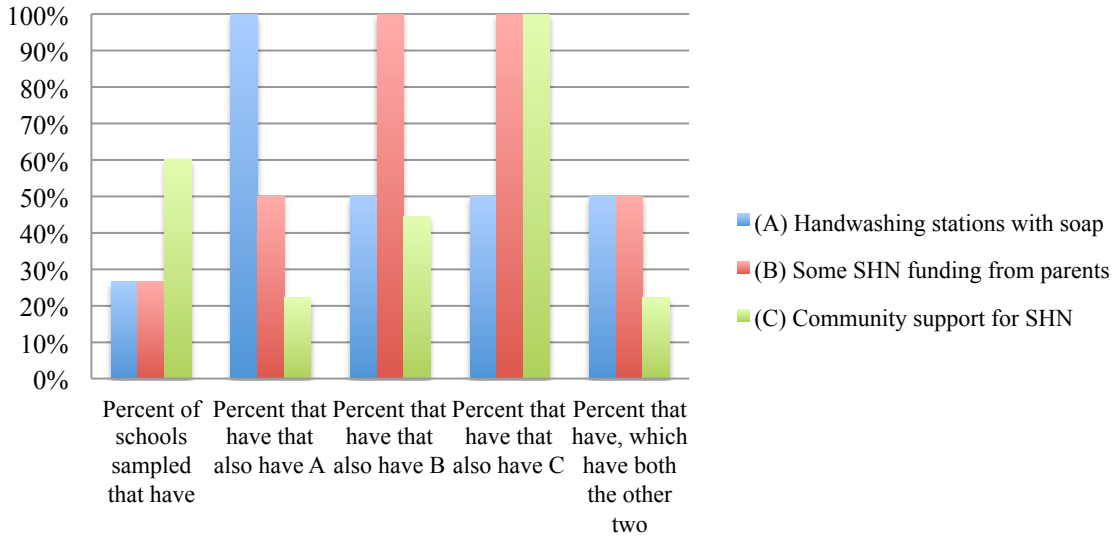
Figure 6: Effect of SHN program's water treatment activities on student health (n=420)

Additionally, schools that received targeted treated water interventions (40 percent or 6 of 15 sampled) as part of the SHN program demonstrated a statistically significant (95% CI: 1.14 to 2.74; p-value 0.01) advantage in students' experience with diarrhea over those schools without treated water. While Phase II did not meet it's goal of increasing the number of schools with treated water due to external factors such as city infrastructure and lack of government investment, the efforts of the SHN program to continue supporting the provision of treated water at the schools that had acquired it in Phase I, has seemingly paid off. Students at schools without treated water were 1.8 times more likely to have had diarrhea in the past two weeks than were students at schools with treated water. However, students at schools with continued water treatment due to the SHN program were no more likely than those at schools without treated water to possess the knowledge that treated drinking water prevents diarrhea (Figure 6). Therefore, resource availability and the behavior options that accompany it are potentially the strongest reasons for differences in diarrhea rates, not increased knowledge on the subject. These WASH-specific results indicate that knowledge, resources, and life skills to affect behavior change are all necessary to see positive impacts on behavior and therefore improved health. If only two of the

three are present, then the risk will exist that health will not improve despite efforts in those two areas.

Lastly, the percent of schools with the following at endline were calculated and cross-compared: A) handwashing stations with soap; B) SHN funding from parents; and C) community support for SHN (Figure 7). Schools that have a combination of the three were also included. These endline findings are relevant as they show the importance of funding and support from parents and the community on WASH infrastructure and resources. There is a strong overlap between schools with handwashing stations that include soap and those that receive funding from parents. However, there are even more schools that receive community support for SHN and yet do not have handwashing stations with soap. This tackles the idea of what type of support is needed by program schools. Funding is obviously crucial, but also the lack of concrete support from the community, in the form of soap provisions and other non-monetary resources for example, is clearly contributing to barriers to WASH behavior changes among schoolchildren.

Figure 7: Resources, funding, and support: Effects on crucial WASH provisions (n=15)



4.4.5 Demographic variation

4.4.5.1 Location (Rural vs. Urban)

Results were further stratified by location of school, either urban Nairobi or rural Kiambu (Table 10 and Table 11). Since Kiambu schools are much more rural and have less resources and opportunities, it was hypothesized that knowledge and behavior at Nairobi schools would be better, as children at those schools have been exposed to more in their lives. That said, results matched the hypothesis for many indicators, as shown in tables. The tables show Pearson correlations between location and various health topics and aspects. Positive coefficients indicate a positive correlation between schools in Nairobi over schools in Kiambu and the correct knowledge or behavior, and a negative number signals the opposite (except for in the case of diarrhea incidence, as a negative answer 'no' is the better behavior in this situation). P-values are provided to show the significance of the difference between the two stratified locations for the given indicators.

Table 10: Analysis of SHN knowledge differences between locations, Part 1

LOCATION (NAIROBI AS DEFAULT)	Can demonstrate proper teeth brushing steps	Know that HIV does not have a cure	Reported diarrhea in past 2 weeks	Know that you cannot tell if a person has HIV just by looking at them	Know the HIV can be transmitted through sex
Correlation Coefficient	0.2237	0.14004	-0.10508	0.25034	0.08793
P-Value	<0.0001	0.0045	0.0313	<0.0001	0.0725
Sample Size	416	410	420	410	418

It was found that there was statistically higher knowledge or behavior by Nairobi students in the following areas: being able to demonstrate the proper steps to brushing teeth; knowledge that HIV does not have a cure; diarrhea incidence in the past two weeks; knowledge that HIV cannot be identified just by looking at an infected person; knowledge that HIV can be transmitted from blood-to-blood contact; knowledge that HIV can be transmitted from mother to child; use of soap during last handwashing; and knowledge that it is important to brush teeth to

keep them healthy. Additionally and most notably, it was found that the odds of using toothpaste regularly when brushing teeth are 29.1 times as high for students in Nairobi than the odds for students in Kiambu (95% CI: 10.12 to 83.74; p-value <0.0001).

Table 11: Analysis of SHN knowledge differences between locations, Part 2

LOCATION (NAIROBI AS DEFAULT)	Know that HIV can be transmitted through blood to blood contact	Know that HIV can be transmitted from mother to child	Used soap last time washed hands	Know it is important to brush teeth to keep them healthy	Use toothpaste when brush teeth
Correlation Coefficient	0.1418	0.09823	0.10994	0.162	0.42657
P-Value	0.0036	0.0442	0.0242	0.0009	<0.0001
Sample Size	420	420	420	420	420

Notably, handwashing practice using water and soap had a statistically significant difference between schools in Nairobi and Kiambu (p-value 0.02). However, there was no statistically significant association between handwashing with soap and water and gender, membership in a school health club, or a student's standard level (p-value 0.36, p-value 0.23, and p-value 0.52, respectively).

4.4.5.2 Sex (Male vs. Female)

Results of the student questionnaires were also stratified by gender to see if there were any statistically significant differences in knowledge or behavior based on gender. Chi-square tests found that most indicators were not statistically significantly different for boys and girls. However, the odds of knowing that menstruation begins for girls during puberty are 2.7 times as high for girls compared to the odds for boys (95% CI: 1.79 to 4.02; p-value <0.0001). While this finding makes sense considering that girls naturally know more about their own bodies than boys know about girls' bodies, it is still important for programs moving forward to understand that more focus needs to be given to raising boys' awareness of menstruation.

4.4.5.3 Grade (Standard 6 vs. Standard 7)

The comparison between the results of students in standards 6 and 7 is very important to the goals and design of the SHN program. A large portion of the SHN program rested on knowledge transfer and behavior change via to peer-to-peer education and life skills education. While those in standard 7 would have been older during exposure to the program and thus potentially more likely to retain or already be familiar with SHN concepts, the desire is that the trickle down effect would impact younger students at a rate similar to older students. On notable knowledge and behavior, standard 6 was found at endline to perform at the statistically same levels as standard 7 on all but five measurements. These five were all sexual health related, which is the one topic area that it was expected for there to still be some differences between the two grades due to the age line between standard 6 and standard 7 often being where students begin puberty or first start exploring their sexuality. The five statistically significant differences (all at the five percent level, except for the first one listed, which is significant at the 10 percent level) are:

- Know that HIV does not have a cure:
    - Std. 6: 83.2%
    - Std. 7: 89.1%
    - OR 1.65, p-value 0.08
- Know that HIV can be transmitted through sex:
    - Std. 6: 83.9%
    - Std. 7: 90.3%
    - OR 1.79 (95% CI: 1.0 to 3.2), p-value 0.05
- Know that menstruation starts during puberty for girls:

  - Std. 6: 34.7%
  - Std. 7: 44.2%
  - OR 1.49 (95% CI: 1.0 to 2.2), p-value 0.04
- Know that HIV can be transmitted through blood-to-blood contact:
  - Std. 6: 78.9%
  - Std. 7: 89.3%
  - OR 2.24 (95% CI: 1.3 to 3.9), p-value 0.004
- Know that one cannot tell if someone has HIV just by looking:
  - Std. 6: 70.4%
  - Std. 7: 83.3%
  - OR 2.09 (95% CI: 1.3 to 3.4), p-value 0.002

Further, endline results for the two standards sampled were compared with baseline results for the same groups. The gap between the results for students in standard 6 and those in standard 7 narrowed for various topics, in terms of standard 6 students closing the gap or surpassing standard 7 students (Table 12). These results show that the trickle down aspect of peer-to-peer education after direct education of one cohort of students (the SHCs) is potentially positively effecting the behavior of younger students who have not spent as much time exposed to or able to understand program activities previously. That said, the majority of the gaps between the two standards stayed the same, and in some cases, standard 6 even saw their negative gap widen, likely due to the variability of younger students' comfortableness with the topics. Differences between standards that are statistically significant are bolded below.

Table 12: Knowledge and behavior differences between standards (n=420)						
Knowledge or Behavior	Baseline Std. 6	Baseline Std. 7	**Difference between Std.'s**	Endline Std. 6	Endline Std. 7	**Difference between Std.'s**
Brush teeth at least twice per day	47.9%	54.8%	**6.9%**	60.8%	64.7%	3.9%
Wash hands before eating	67.6%	73.2%	**5.6%**	91.6%	92.3%	0.7%
Use soap when washing hands	78.1%	79.0%	0.9%	83.2%	79.2%	-4.0%
Use toilet for defecation at school	92.7%	95.8%	3.1%	97.7%	96.1%	-1.6%

Most notably, the gap between standard 6 and standard 7 for those who had a diarrheal episode within the past two weeks slightly widened. At endline, 32.2 percent of those sampled in standard 6 had a diarrheal episode in the past two weeks, while only 25.1 percent of those sampled in standard 7 did. While the overall rate for both standards decreased from baseline to endline, the widening gap indicates that there may be more negative factors affecting younger students' health that were not necessarily accounted for by the SHN program.

Another important result to note is the percentage of students in each grade who responded that health and SHN affect academic performance, a strong indicator of the acceptance and understanding of the basic concept of the SHN program. Both standards saw an increase in this attitude, in addition to a narrowing gap between the standards.

4.4.6 SHC comparison

School Health Clubs were established at each of the 25 program schools. SHCs were formed with at least 40 students at each school in order to act as a gateway to disseminating information to the entire school population through peer-to-peer education. Many of the program activities were aimed at the SHC children with the goal of successive child-to-child teaching. That said, the program aimed to have all students at program schools increase their knowledge and healthy behaviors, however it is feasible that SHC students were more likely to see truer and

quicker development due to their direct, instead of indirect, knowledge acquisition and life-skills training. The results of the 420 student questionnaires revealed that there were numerous health topics which School Health Club children had a better grasp on than non-School Health Club children. Using chi-square equality of proportions tests, the following were found to be statistically significant differences at an alpha level of 0.05:

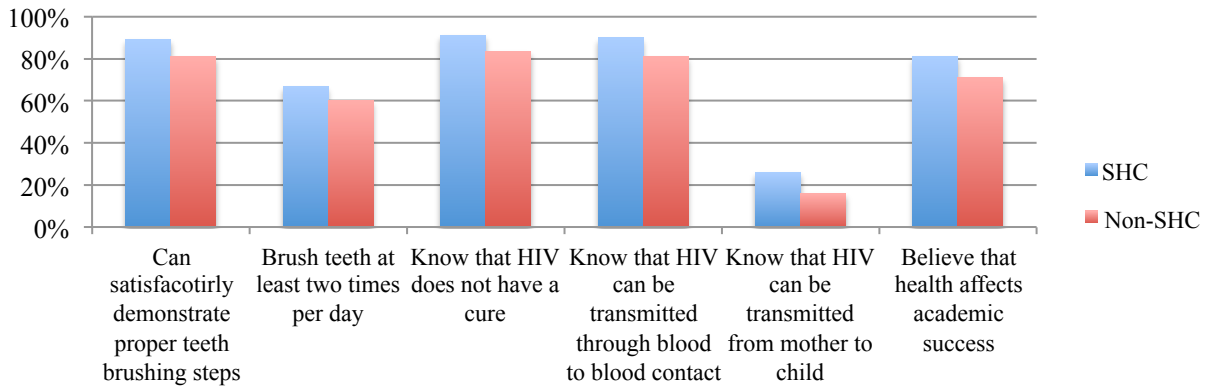
- The odds of being able to satisfactorily demonstrate the proper steps for teeth brushing are about 1.9 times as high for students in the School Health Club compared to the odds for non-SHC students (95% CI: 1.03 to 3.45; p-value 0.04).
- The odds of knowing that children's health affects their academic performance are about 1.8 times as high for SHC students compared to the odds for non-SHC students (95% CI: 1.07 to 2.87; p-value 0.03).
- The odds of knowing that HIV does not have a cure are about 2.0 times as high for SHC students compared to the odds for non-SHC students (95% CI: 1.05 to 3.92; p-value 0.03).
- The odds of knowing that HIV is transmitted through blood-to-blood contact are about 2.1 times as high for SHC students compared to the odds for non-SHC students (95% CI: 1.15 to 3.91; p-value 0.02).
- The odds of knowing that HIV can be transmitted from mother to child are about 1.8 times as high for SHC students compared to the odds for non-SHC students (95% CI: 1.09 to 2.90; p-value 0.02).
- The odds of having diarrhea in the last two weeks are about 0.8 times as high for SHC students compared to the odds for non-SHC students (95% CI: 0.49 to 1.20; p-value

0.24). Although an odds ratio below one, this is a positive indicator for the initial education of SHC students in this situation because the desired outcome is less diarrhea.

- Lastly, although not quite statistically significant at the five-percent level, this finding is very close (95% CI: 0.47 to 1.06; p-value 0.09) and is a meaningful finding: 44.6 percent of SHC students sampled knew that girls start menstruation during puberty while only 36.3 percent of non-SHC students expressed this knowledge.

The raw percentage distribution of those statistically significant health behaviors and knowledge by SHC status were compared (Figure 8). These percentages were transformed into proportions and then compared using chi-square tests of equality of proportions in order to determine the odds ratios and the significances of the differences between the two groups, as listed above. The odds ratio refers to the odds of knowledge or behavior, given being a School Health Club student versus the odds of the same given not being a SHC student.

Figure 8: Knowledge and behavior of SHC students vs. non-SHC students (n=420)



However, there were also questions to which the SHC students either performed statistically the same as their peers (slightly above or equal) or even slightly below (Table 13 and Table 14). While it was expected that SHC students would score higher post-program due to their direct training, the peer-to-peer education element was a staple of the program, and as such,

it was hoped that non-SHC students would potentially score as high as their peers, given that scores were generally up overall from baseline. None of the following results are statistically significant, but they do indicate that knowledge spread has possibly taken place across the entire cohort of those exposed to the program, due to the critical peer-to-peer education element.

Table 13: Non-statistically significant differences between SHC students and non-SHC students, Part 1 (n=420)

Knowledge or Behavior	Result	95% CI and p-value
Knows why it is important to defecate in toilet	SHC lower knowledge Odds Ratio: 0.90	0.67 to 1.80 p=0.69
Knows that you can't tell if someone has HIV just by looking	SHC higher knowledge Odds Ratio: 1.03	0.60 to 1.57 p=0.90
Knows HIV is transmitted through sex	SHC higher knowledge Odds Ratio: 1.36	0.34 to 1.21 p=0.17
Knows key times to wash hands	SHC higher knowledge Odds Ratio: 1.12	0.74 to 1.70 p=0.59
Used soap last time washed hands	SHC lower knowledge Odds Ratio: 0.67	0.41 to 1.10 p=0.12
Brushes teeth at least twice per day	SHC better behavior Odds Ratio: 1.35	0.88 to 2.05 p=0.16
Uses toothpaste to brush teeth	SHC worse behavior Odds Ratio: 0.99	0.51 to 1.92 p=0.96

Table 14: Non-statistically significant differences between SHC students and non-SHC students, Part 2 (n=420)

Knowledge or Behavior	Frequency Result
Washed hands previous day	SHC: 95.3% **Non-SHC: 97.0%**
Washed hands before eating previous day	SHC: 91.9% **Non-SHC: 92.6%**
Washed hands after using toilet previous day	**SHC: 64.9%** Non-SHC: 62.2%
Used soap during last hand wash	SHC: 77.0% **Non-SHC: 83.3%**
Defecates in toilet at school	SHC: 95.9% **Non-SHC: 97.4%**
Knows washing hands after defecating prevents diarrhea spread	**SHC: 64.9%** Non-SHC: 61.9%
Knows washing hands before eating prevents diarrhea spread	**SHC: 64.2%** Non-SHC: 61.9%
Eats at school daily	**SHC: 97.9%** Non-SHC: 94.4%
Eats three times at school daily	**SHC: 66.2%** Non-SHC: 65.6%
Eats fruits or vegetables daily	**SHC: 91.2%** Non-SHC: 91.1%
Washed last fruit before eating	**SHC: 92.6%** Non-SHC: 91.9%

4.4.7 School observations results

School facility observations were also conducted to assess the success of the program in its goals that involved infrastructure or resource provision. Various issues were identified at baseline using similar measures of observation and interview, and these issues were to be addressed as byproducts or direct results of various program activities. However, at baseline, a full observation survey was not conducted at all sampled schools. Various aspects that were needed for designated indicators were officially observed and recorded, but not a complete, official survey, which was added at endline to assess the completion and success of Phase II activities.

In addition to facilities and resources that were portrayed in the indicators chart previously dissected in this report, the baseline evaluation found that program schools had many needs, which Phase II of the program would address. This additional infrastructure included (18):

- Lack of proper latrine water disposal (runoff);
- Lack of sanitary disposal bins;
- Lack of clean latrines;
- Lack of "improved" toilets;
- Lack of running water;
- Lack of functional water storage;
- Lack of accountability for cleaning and maintenance of WASH infrastructure; and
- Lack of resources for maintenance of WASH, including small repairs (tools and toolboxes).

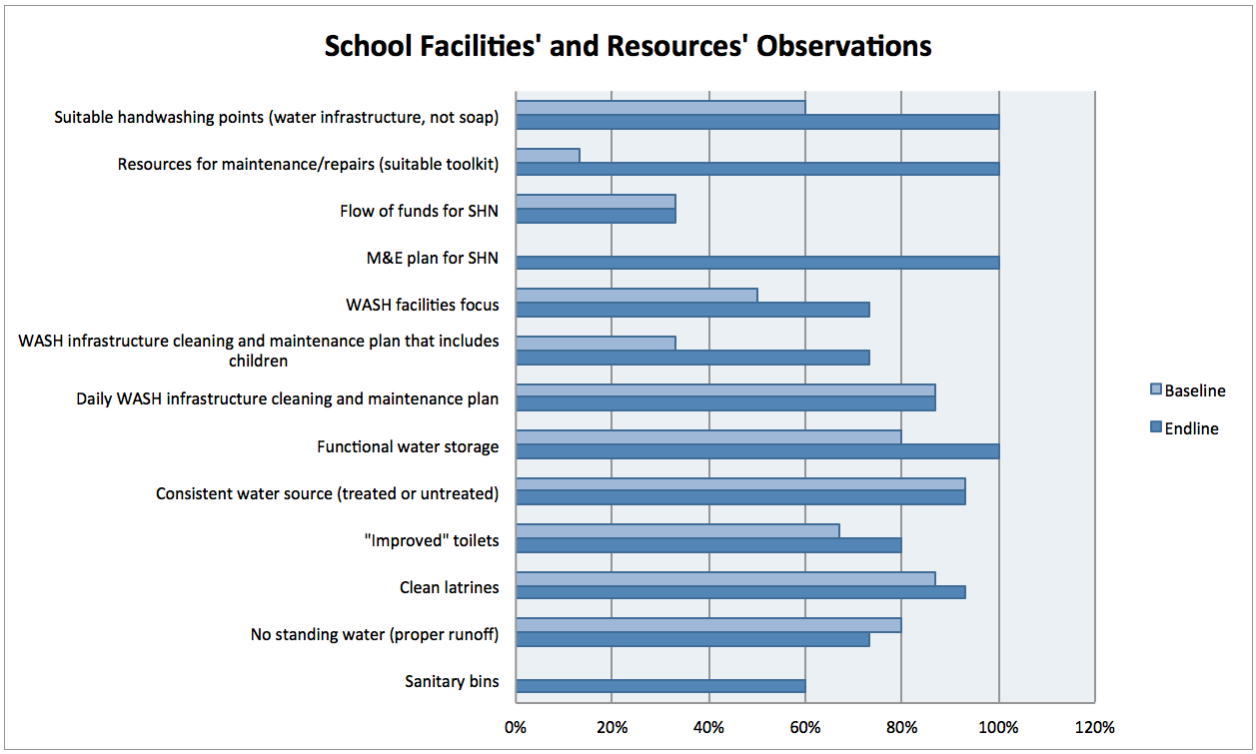
Baseline also found a lack of:

- Monitoring and evaluation of SHN;

- Funds for SHN; and
- "Focus on…WASH issues" (18).

Program activities over the two years of Phase II implementation sought to address many of these deficiencies. Changes were found in these observed factors from baseline to endline in terms of percentage of sampled schools (Figure 9). As seen from the graph, all but one issue was either improved or stayed steady from baseline to endline, with the exception of the presence of standing water, which was slightly higher at endline. There are potential explanations for this, including the ongoing construction of new latrines and water points at the time of endline evaluation, as well as the timing of the endline evaluation during the rainy season.

Figure 9 (n=15)



4.5 Summary

The Save the Children School Health and Nutrition program evaluation data were gathered predominantly from 420 student KAP questionnaires, as well as observations of resources and facilities at all sampled schools. This data gathering procedure mimicked the procedures conducted at baseline in 2013 by independent evaluators. There were slight differences in the tools used at endline due to requests by the donor to make additions. However, these differences only consisted of added questions for the donor's use, and the questions relating to the main indicators established at baseline remained unchanged.

While barriers to knowledge and behavior change potentially existed due to the inexact scientific process of program activities, such as continual mass marketing campaigns on school grounds and sporadic teachings at assemblies, it does appear that many behaviors and much knowledge were improved over the course of the two years of Phase II of the program. The 5.6 percent increase in students who believe that being healthy and SHN affect academic performance is a strong indication that the overall meaning and necessity of the program has impacted the exposed schoolchildren. This belief can possibly lead to further behavior change and sustainable practices because of the natural desire for the highest level of learning and education that exists at the program schools.

Unofficial qualitative methods were used as confirmation of unspecific ideas that were officially addressed by the student questionnaire and observation survey. These brief group discussions with students and interviews with head teachers and SHC patrons triangulated the quantitative results and were reviewed on a daily basis to ensure that the official quantitative sampling was robust, accurate, and not incorrectly influenced.

The goal of the closeout of Phase II was to use the results of the endline and the comparison with baseline over the course of the two years to provide a pathway for program schools to achieve self-sufficiency in SHN. This was addressed through the presentation of the preliminary evaluation results and analysis to stakeholders at closeout meetings, and is further confronted in the recommendations and lessons learned in the following Discussion and Conclusion section.

CHAPTER 5: DISCUSSION AND CONCLUSION

This chapter will review the impact of the findings of the Save the Children SHN program in terms of providing lessons learned and recommendations for the organization, program schools, and future SHN programs based on the results of this evaluation. This chapter will also delineate how the endline evaluation contributes to the existing evidence on SHN programs, WASH, and peer-to-peer teaching in schools, particularly in developing countries such as Kenya.

5.1 Contribution

This endline evaluation of a SHN program in primary schools in and around Nairobi, Kenya contributes significantly to Save the Children's catalogue of literature and results of their global school health model and strategy. As the first of the Wrigley-funded SHN programs to reach completion and receive a full evaluation, SCI can use the findings for two distinctive and critical purposes. The first is to inform the remaining Wrigley-funded SHN programs of strategies and recommendations for their continuing activities and, particularly, their closeouts. The second is that future SCI SHN programs will now possesses direct results of SCI program efforts, including the use of peer-to-peer education and SHCs, as well as the need to focus on education, infrastructure, and sustainable resource provision simultaneously.

In order to make a case for the direct impact of this specific version of an SHN program with its particular components on the observed decrease in schoolchildren diarrheal rates and increase in schoolchildren attendance due to health, data from comparable schools in the area or general local rates of both outcomes over the time period of the program are needed. The lack of data specific to this area on those topics and the difficulty in finding consistent measurement methods that could be comparable made this unfeasible for this evaluation and report.

5.1.1 Program satisfaction

a) Students

Enumerators held unofficial, but recorded, group discussions with students at the time of data collection. During these discussions, notes were taken on students' satisfaction with the program and their beliefs about its impact in their schools. Overall, students reported that the delivery of the program activities and messages was effective and that they passed on knowledge and further shared the SHN messages with younger siblings, other relatives, neighbors, and friends. They reported satisfaction with the SHN activities at their schools, with many believing that they "learned to be confident", were taught how to "maintain good health", and that SHCs and their influence in particular "protects children" and "encourages children to be clean". Endline evaluation found that, overall, students saw a positive change in the status of SHN at their schools, with more labeling their school as having "good" SHN after the program duration.

b) Teachers

While teachers were found to not rate SHN at their schools as highly as the children did at endline, teachers still reported general satisfaction with the program. The majority of head teachers reported that the program brought increased attendance and improved WASH facilities to their schools, a major success for the program as those were key focal points of Phase II. Further, teachers were satisfied with the SHCs and the peer-to-peer model of the program, with nearly all teachers reporting success of education on WASH through SHC teachings. Lack of funds and supplies, including soap, provided by the program was reported as one area where teachers were not as satisfied at endline. While this result is understandable due to the issue of low levels of resources in program schools, the SHN program goals and activities did not include providing direct funds to the schools. The program instead focused on improving knowledge,

behaviors, and infrastructure in order to create an increase in sustainable practices, and thus, an improvement in resource quantity and quality. Lastly, the three aspects of SHN that teachers reported being the most important for an intervention to encompass were provision of handwashing facilities with soap, teacher training on health issues, and health education for students. All three of these aspects were demonstrated during the completion of the Phase II activities, and as such, there is an alignment between what aspects would satisfy teachers and what really took place.

5.2 Evaluation of Criteria

5.2.1 Efficiency

Despite the use of the same methodology at endline that was used to measure indicators at baseline, overambitious targets that had been set following the baseline assessment created internal efficiency measurement issues. Although there were found to be notable changes from baseline in many indicators, some of the changes were drops that seem unlikely to have occurred naturally. In addition, changes in health indicators may take time to take shape and become fully measurable. This may be a reason why some indicators remained temporarily unchanged despite the successful completion of activities addressing those health issues. It should also be noted that some of the program activities were still being completed at the time of endline data collection due to a lag in program wrap-up, and efficiency may increase once they are fully complete by the actual pullout of the program.

5.2.2 Relevance

The SHN program is in line with the wider global and country goals of Save the Children. The components of the SHN program in Kenya are well aligned with the current context of the peri-urban and rural areas in Nairobi and Kiambu, due to the high levels of

vulnerability and poverty there. The endline evaluation highlighted the relevance of the program due to its coherence with the issues that affect the health of children in schools. The rights-based, holistic approach of the program in dealing with children's ownership of both WASH and peer education, empowers children to be protagonists in their own health and development processes. In a broad beneficiaries' needs context, students who are chronically absent from school are more likely to fall behind academically, display behavior and discipline problems, and even drop out of school completely. In addition, mass absences affect the learning pace of all students. It is essential to address student health as it has one of the strongest and most direct effects on school attendance and therefore academic performance and future success. The SHN program sought to address the major factors that influence health outcomes of students in schools through interventions such as handwashing, which is the most effective way to prevent the spread of diarrheal diseases, the top health reason for school absence in Kenya.

5.2.3 Potential for Sustainability

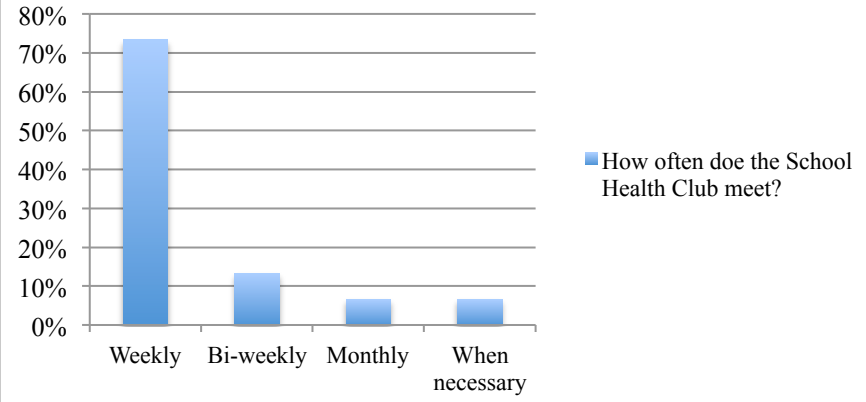
Sustainability is a complex issue, influenced by many interrelated factors, that relies on a range of interdependent stakeholders, including national and local government institutions, external health and support agencies, and the community at large. In many cases, the key to ensuring sustainability of school programs is the involvement of the communities surrounding the schools, such as village leaders and students' parents, in the planning and carrying out of activities. This helps to ensure focus on developing long-term solutions rather than short-term fixes. The endline evaluation design did not allow for a direct assessment of sustainability or longer-term program effects, however, factors that may contribute to its sustainability were assessed.

SHN program activities worked to develop close linkages between the students and their teachers. These linkages provide a solid basis for sustainability as these two essential beneficiaries and stakeholders now have the understanding and knowledge of how and why to collaborate after program completion. For example, SHCs are now established institutions within program schools, and they can continue to reach successive classes of primary schoolchildren as new standard 4 students will be added each year as old standard 8 students graduate. Further, since the activities of the program directly used students as an entry point for introducing sanitation and hygiene education, they are more likely to feel ownership and care over continuing similar activities once the program has ended. This is an effective way of helping young people acquire life skills to complement their direct knowledge, which increases the likelihood that they will find innovative ways to involve their families and communities, as well as implement what they have learned after leaving primary school. Many of the interventions implemented by Save the Children are replicable and can be adopted in the communities once the ideas and messages are shared through the students. The endline evaluation found that many students already share the health messages they have learned from the program with their parents, siblings, and others in the community, and it is clear that aspects such as proper handwashing, personal hygiene, and a balanced diet are replicable in the home setting with knowledge transfer to parents.

Overall, the advancement of the SHCs that were established in Phase I is essential to the sustainability of Phase II. Trainings were conducted for all SHCs on peer-to-peer approaches to communicating messages. This builds upon the trainings on health subjects that were also conducted, so that now children can teach other children who can then teach incoming younger children, creating a sustainable web far into the future. The sustainability of the SHCs is

enhanced by the establishment of School Health Club patrons, who are responsible for overseeing the club and encouraging continued student activities related to health. Further, sustainability relies on SHCs meeting frequently and discussing current issues relating to SHN in their schools and how to address those issues. It is also critical that SHCs continue to educate the rest of the school and students through regular teachings in classrooms or assemblies. Endline results found that over 70 percent of sampled SHCs meet weekly, around 13 percent every other week, and the remaining SHCs less frequently (Figure 10). This reporting asked for regularity throughout Phase II and therefore suggests that the rate had been continuing for two years, a good indicator of the same rate continuing into the future. In addition, head teachers and SHC patrons reported varying frequencies of times that SHCs taught lessons to the rest of the school, with some only occurring once or twice a term, but most occurring much more frequently. The SHN program committed to empowering the schoolchildren through the SHCs by having them own the information, messages, and activities, and giving them the opportunity to create and innovate so that SHN moving forward reflects what the students feel is most essential to their personal continued health and learning.

Figure 10: Frequency of SHC meetings (n=15)



Phase II of the SHN program also addressed sustainability through other avenues outside of the SHCs. WASH maintenance toolkits were successfully provided to each program school as

an intervention activity to help the schools maintain facilities and perform small repairs without having to spend money on outside tools or repairmen. These toolkits included saws, screwdrivers, wrenches, and pliers. The goal of the kits was to increase sustainability of the facilities that were built or provided as part of Phase II. During evaluation, it was observed that numerous program schools had constructed makeshift handwashing points because the handwashing stations provided by Save the Children had broke, but the school did not have the proper tools to repair them. In addition, head teachers from at least three sampled program schools mentioned the need for help with WASH repairs. The toolkits, provided in the final quarter of the program, should address these issues and enhance sustainability of proper WASH into the future.

Further, one program activity goal was to train school administrators, including teachers and janitors, on proper maintenance of WASH facilities. These trainings were completed during Phase II, and the number of administrators trained exceeded the target by 33 percent. Lastly, the majority of the schools had in place a quality operation and maintenance plan, which identified who is responsible for cleaning and maintaining the facilities on a set schedule. Many of these plans did, and will continue to, involve the students in the cleaning and maintenance. Giving children responsibility for the facilities increases their ownership of and dedication to them, which will in turn increase their care of the facilities and decrease the amount of unnecessary and unintentional harm done to them by the students.

The SHN program also focused on sustainability through helping schools establish self-monitoring plans to use after Save the Children has exited. These monitoring plans were created through collaboration between various school officials with an eye toward how the children can be involved in the process. It is critical that the monitoring plans are implemented after the close

of the program so that the cleaning and maintenance of WASH facilities, as well as student behavior, can be checked over time to ensure there are no backslides in the absence of direct Save the Children intervention. These plans give children responsibility over monitoring their own cleaning of toilets and classrooms, and their own personal hygiene, as well as tracking water supply, broken facilities, and school nutrition habits. This is a very empowering aspect for the children as they are not often given so much power and responsibility to "grade" tasks and check that such important aspects were done properly. They are normally just told what to do and when to do it, without having any control over checking results and making recommendations.

The self-monitoring plans were designed by schoolteachers specifically for their unique school situation in conjunction with the Save the Children SHN team and public health and education officials. The general outline of the plans includes basic monitoring that can be conducted daily by the children, with a rotating schedule based on standard level. The process will have the completed monitoring forms collected by either the head teacher of the SHC patron who will then perform the monitoring himself or herself once a week or once every two weeks, in order to ensure that the students are recording properly. The monitoring plans also include visits from SMC members who will take part in the monitoring activities with the children once or twice a term in order to further engage the community and initiate buy-in from community members. Long-term monitoring will also be done by the head teacher or SHC patron by setting termly targets and checking progress monthly on areas such as how many times the SHC teaches other children, how many school-wide health specific activities are held, and how many times outside repairmen need to be called for WASH infrastructure. A monitoring report will be formulated using all of this data, as well as from recommendations for how to better improve

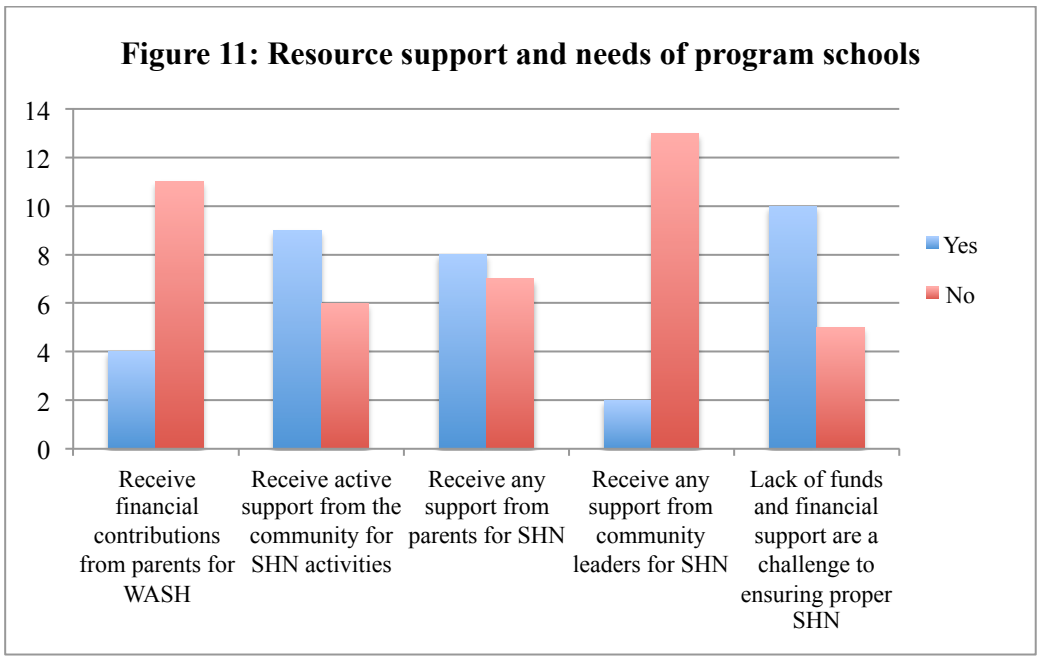
SHN provided by the children themselves, and the report will be presented to and discussed with the SMC and other school partners at designated meetings or when help or resources are desired.

Another important recurrent theme among the head teachers was the absence of financial means to keep WASH facilities clean, hygienic, and well maintained. Per the results of interviews with head teachers and SHC patrons, the community and parents are not seen as being fully committed to the SHN program, which raises questions for sustainability of the program. Observations made during the endline evaluation indicated that there were quite a number of facilities that had been implemented by SCI which were already nonfunctional due to the need for repairs, such as tap replacements, however funds and resources from the community and parents are lacking. Many handwashing points also lacked soap at endline, indicating absence of a long-term strategy for soap provision, something that was then a huge focus of the SCI exit plan.

The issue of soap provision is crucial to the sustainability of many aspects of the SHN program. School facility observations found that only 26.7 percent of program schools sampled had sufficient handwashing facilities that included soap. All 15 program schools sampled had handwashing points or stations, many of which had been provided during Phase II of the program. However, the majority of them lacked soap or a suitable alternative. Based on head teacher interviews, it was found that schools often do not have enough money to continually supply soap for students to use. Other issues include students stealing the soap or it being destroyed or ruined. In order to increase sustainability in terms of soap and handwashing, there needs to be a specific hygiene education lesson for parents, teachers, and SMC members. It is important that everyone understands why the soap needs to be present, why the handwashing facilities are crucial to the students' health and academic success, and what role each individual

stakeholder can, and needs to, play to make sure there is soap available. If parents and other community members involved in SMCs are taught of the absolute necessity of consistent soap access, then they are more likely to "buy-in" and provide financial and in-kind contributions for soap access and sourcing. Additionally, it is not necessary to provide the typical bar soap, as detergent flakes, melted down hard soap, or liquid soap mixed with water can be substituted effectively.

That said, ten of 15 schools sampled at endline said that the biggest challenge to keeping health and nutrition in school sustainable and up to standard is either a lack of funds from the government or a lack of financial support from parents (Figure 11). Only four of 15 schools sampled receive financial contribution toward the school's sanitation and water facilities from students' parents. At least 11 of 15 sampled schools indicated that there is still a need to educate both parents or community leaders, with some head teachers suggesting that this be done by training the SMCs and then following up to ensure that they in turn hold trainings for parents. Others suggested that sustainability could be enhanced through working with school alumni in the community as a gateway to educating community groups and leaders as to the importance of supporting SHN with resource contributions.



A final potential threat to sustainability of SHN program components is the usual transfer of teachers from one school to another. This creates the need for regular SHN trainings, which may be a challenge once Save the Children phases out, as the organization was the one organization running all trainings over the past four years. This again emphasizes the importance of the institutionally of the SHCs and SHC patrons, including documentation, internal systems, and organizational structure so that the transfers from student to student and teacher to teacher are smooth and do not create knowledge gaps as some move in and others move out of the schools. Additionally, future SHN programming should consider "training of trainers" methods so that teachers who participate in the intervention trainings are empowered to share lessons learned with fellow teachers.

5.2.4 Effectiveness

This report highlights the program's focus on empowering children and working with schools to implement interventions that will achieve the overall goal of improving the health, nutritional status, and educational status of school-age children. Child empowerment was one of

the key strengths of the program design. The strategy generated more concrete impact of activities within the program period and aims to ensure longer sustainability of the intervention by empowering children to become protagonists in their own development processes. The development of the School Health Clubs was a key instrument in the delivery of health messages to fellow students. During informal focus group discussions with students, the majority articulated that they had learned most of their healthy behaviors and practices from their peers who had been trained by Save the Children. This was also backed by reports from head teachers and SHC patrons who stated that development of the SHCs has changed the general hygiene of all students for the better. They also added that, due to increased need, they ensured that SHC students had a chance to share information during assemblies and also develop hygiene corners in their classrooms to disseminate knowledge and provide avenues for discussion. The delivery of health messages through the peer-to-peer approach was found to be highly effective.

Since program schools had received specific resources and targeted interventions regarding handwashing, it would be reasonable to expect changes in consistent handwashing with soap among the children. However, this was not the case, as there was a very small proportion of handwashing facilities that had soap or a suitable alternative at endline. One of the major factors that contributed to this was the absence of funds to acquire soap on a continual basis.

Additionally, with the provision of ample water storage and harvesting facilities, it was reasonable to expect a significant change in percentage of schools with access to safe drinking water where every child has approximately two liters of treated drinking water daily. This was not the case, though, as virtually all schools were found to not have water treatment mechanisms

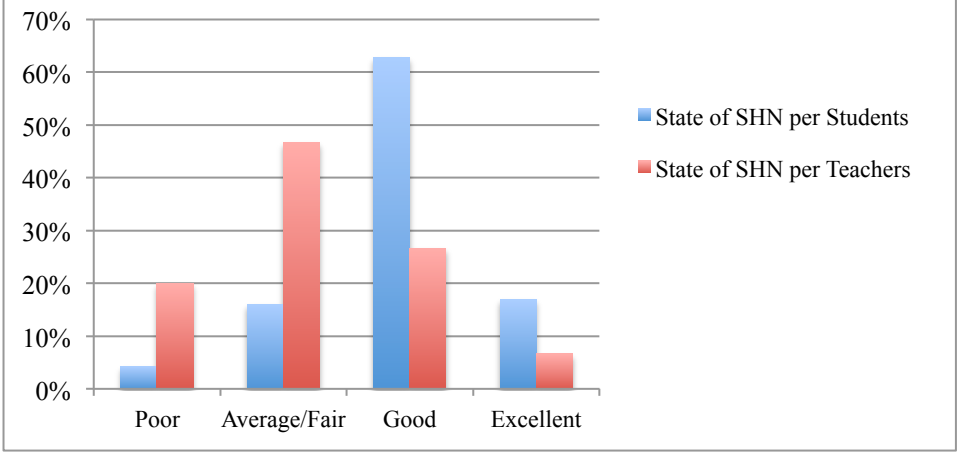
in place. Particularly, schools in Kiambu did not have any water treated; hence water available was not safe for drinking.

There are several factors that can be attributed to this lack of adequate safe drinking water. The SHN program was unable to provide the schools with lasting means to treat water (extensive chlorine or bleach supplies) because of budget constraints, and the MOH and MOE have not been consistently providing chlorine to schools that do not receive treated water from the City or County, despite their recent dedication to doing so. This, again, can be attributed to the lack of full commitment by the school management committee members to actively advocate to the government on behalf of schools, and also to inconsistent dedication of government officials to follow through on promises made and policies implemented.

While there were notable improvements from baseline to endline in many SHN areas at program schools, the overall effectiveness of the program may have been partially limited as seen by the perception by both students and teachers of SHN in schools at endline (Figure 12). Good or excellent SHN, as defined at baseline, is desired, however it can be seen that almost half of students and teachers sampled believe SHN at their school is poor or average. One takeaway is that effectiveness may have been increased if students had the same standards as teachers in terms of what was or was not acceptable for SHN. Students clearly have a more positive view of SHN at their schools per the graph, however based on informal discussion results, it is evident that students do not necessarily realize the wide range of issues at hand and accept a lesser state as acceptable. There should be a clear definition of what is acceptable for both health facilities and health behavior between students and teachers so that there is a more effective drive to improve areas that have fallen behind. For example, if students do not hold the school facilities

to the highest standard of cleanliness and function, then change is less likely because it is not demanded, and therefore effectiveness is not maximized.

Figure 12: The perceived state of SHN in schools (n=420 for students; n=15 for teachers)



Lastly, the SHN program faced challenges due to some internal ineffectiveness at the Save the Children country office. Gaps were evident in the coordination mechanisms between Save the Children Kenya departments as a lack of established internal systems and structures led to delays between procurement and finance, and therefore, delays in the completion of program activities. For instance, by the set program completion date in August 2015, construction of latrines at some program schools was still ongoing due to delayed payments to contractors and the absence of an internal WASH Advisor for large portions of the program period. Specifically, because Save the Children Kenya does not have a history of supporting programs where WASH is a central feature, there was internal confusion about the standard operating procedures (SOP) for WASH construction involving external actors and limited internal literature to review to help in decision-making. Additionally, understaffing in specific areas, including a technical WASH position, as well as having separate Nairobi and Kiambu activity implementation positions, contributed to delays and difficulties in complete effectiveness.

While the program budget was tracked and reviewed during the duration of the program, the endline evaluation team did not directly collect data on specific or micro-level costs. The program budget was balanced evenly over the two-year period, excluding the leftover funds that had been allocated to the not completed program activities (deworming and Vitamin A supplementation) and the last set of construction activities which were in the process of being completed during endline data collection.

5.2.5 Impact

Due to the nature of the methods chosen for the program at inception and the limitations of the evaluation delineated in this report, it is not possible to measure true impact due solely to the SHN program. Since program administrators did not use a true, consistent comparison or control group for the SHN program, and since no comparison group was measured at baseline, it is not possible to assess the program at endline with a true impact evaluation. However, there were still potential "effects resulting from the activity on…indicators" (56). Over the program time period, there were decreases in episodes of diarrhea among schoolchildren at program schools, increases in reported handwashing knowledge and behavior, and achievement of complete coverage of all programs schools achieving health objectives listed in their school development plans. The result of decreased diarrhea does not seem to be due to a natural progression over the short time period per the literature, and the completion of the activity of schools achieving at least one stated health objectives from their annual development plans was a cause of Save the Children influence.

5.3 Broad Implications

5.3.1 For SHN in Kenya

Phase II of the Save the Children SHN program in Nairobi and Kiambu from 2013 to 2015 lends support to the UNICEF SOPO program's finding that health knowledge does not necessarily improve health behavior in Kenya. SOPO found that creating pathways for maintenance of facilities and resources increases the likelihood of the knowledge to behavior transition. This evaluation supports that concept, as handwashing knowledge at endline exceeded handwashing practice during key times, with one of the key barriers contributing to this difference being the lack of functioning handwashing stations, lack of safe and treated water, and, most importantly, the absence of soap at the majority of sampled schools. Lack of sustainable and continuous resources, such as soap, treated water, proper water storage, and proper waste disposal and drainage are problems that create barriers to SHN success in Kenya per the literature, and this evaluation also supports those findings.

5.3.2 For SHN at SCI

The implications of the results of this evaluation for SHN programming at Save the Children International are broad and more concrete, due to the nature of the evaluation in terms of measuring program activities, indicators, and implementation characteristics. The program was the first of its kind of the Wrigley-funded set of SHN programs globally to reach completion and have a full evaluation be conducted on it. That said, the results of this evaluation are informative to SHN and provide new literature on best successes and potential pitfalls of the other programs in the set and similar programs in the future. Previous evaluations done of Save the Children SHN programs have been focused outside of Kenya, and this evaluation is the first in the Save the Children literature to provide an evaluation of an SHN program by the Kenya

country office. The Kenya country office, as with all SCI offices, underwent a change in structure in 2013, and this evaluation will provide the management with critical information on the success of one of the first programs post-transition, and also lessons learned and recommendations that can be applied across their SHN activities in the future.

5.3.3 For peer-to-peer education and WASH in SHN programming

Peer-to-peer education using SHCs and WASH were two of the main targets and avenues to improved SHN through the Save the Children program. The results of this evaluation found that there were improvements in handwashing after toilet use and a reduction in diarrhea incidence from baseline to endline, confirming the results of the 2009 UNICEF study in Tajikistan. Onyango-Ouma et al.'s results from a study of SHC-like peer-to-peer education found that this type of intervention produced more health-protective actions, and Mellanhy et al.'s results found that peer-led groups gained more knowledge than adult-led ones in schools. This literature, insinuating that both actions and information can improve over time with peer-to-peer teachings, was confirmed by the results of this evaluation for various behaviors and knowledge. While not all results from baseline to endline showed improvements, triangulation of information provided by students and teachers during informal interviews and discussion groups attributes increased cleanliness, health information, knowledge sharing outside of the school, and WASH behaviors to the education of schoolchildren by the SHCs.

Broad implications of this evaluation for WASH in SHN programming are centered on the concept that WASH interventions in schools need to take a multi-pronged approach in order to cause real behavior change and therefore positive impacts on health. While the program evaluated here did see reported increases in knowledge and behavior for various WASH indicators at endline, the program activities targeted a range of intervention types, including

infrastructure construction, temporary resource provision, teacher training, and student education. The program specifically targeted sustainability of WASH in schools, and succeeded in goals of: providing WASH maintenance kits to all program schools; helping schools design and complete health improvement plans that included WASH goals for the first time; and encouraging the creation of lasting WASH cleaning and maintenance monitoring plans involving both teachers and students. While soap provision and community support of SHN and WASH activities continues to be an issue in this specific program's schools despite efforts during Phase II, this evaluation adds to the overall literature on the importance of attacking WASH in schools from multiple levels, and that education must be coupled with an increased focus on sustainability in order for behavior change to be realized.

5.4 Lessons Learned

Achieving full community involvement and participation is a challenge to any program's sustainability. In Kenya, there is still substantial community belief in handouts from development partners rather than ownership of development. This endline evaluation found that schools are more likely to refer to SHN program constructions as "Save the Children structures" instead of school structures. This is an issue for sustainability because if schools do not view the program outcomes as their own, then it is less likely that they will care for them, maintain them, and keep up their effectiveness over time. Therefore, it is necessary to take an increasingly participatory approach to such programs in order to more effectively and efficiently implement activities, infrastructure, and initiatives that will be sustainable over time. Save the Children focused on increasing this ownership by both teachers and students through SHC empowerment, designing self-monitoring plans, and providing teachers with tools to continue to teach and prioritize SHN even after Save the Children has exited.

With general delays in the inception of Phase II, the implementing timeframe was reduced as some of the activities, such as WASH construction and dissemination of WASH toolkits, were done near the end of the program. This exemplifies the importance of prioritizing WASH activities early on in the SHN program cycle, as increases in WASH behavior often take times and involve the infrastructure to be in place with time left to observe and monitor use and behavior. In this case, the issues related to WASH were linked to budget constraints, staff capacity, and delays in internal processes within the Save the Children country office.

Another lesson learned relates to coordination with the government in order to provide Vitamin A supplementation to ECD children, an activity which ultimately was not completed during Phase II. A takeaway lesson from this is to establish mutual accountability and buy-in from all stakeholders, particularly government actors, at the very beginning of the program, so that all partners have an understanding of goals and are motivated to accomplish them. Save the Children made extensive efforts, but the avenues to communication with the proper government officials were often challenged because there was not dedication from those officials who felt like this was outside the scope of their duties.

Outside of WASH, the endline evaluation revealed very limited knowledge of the protective nature of condoms against HIV. Only 8.1 percent of students sampled mentioned condoms as a method to prevent the transmission of HIV, in contrast to 73.6 percent who mentioned abstinence as a method of prevention. Feedback provided by teachers during program closeout meetings revealed that there is a divide over how to teach about sexual and reproductive health (SRH) in schools in Kenya, particularly in rural areas, with many learning toward abstinence-only education while others want to promote all of the ABCs (abstinence, being faithful, and condoms). The national curriculum actually includes education about all the ABCs

for certain standards in primary school, and considering that abstinence only is not truly realistic, it is essential that program schools continue to revamp their SRH plans to include more detailed and empowering education on condom use. Further, schools should work to provide community referral services for students who are sexually active and want to protect themselves against HIV and other sexually transmitted diseases (STDs).

In addition, the SHN program lacked regular monitoring. Consistent monitoring would have benefitted the schools through an increased sense of ownership and also an ability to identify and prioritize next steps. Monitoring, evaluation, accountability, and learning (MEAL) should be embedded in future programs so that each program activity has specific MEAL aspects that can be traced throughout their implementations. It is suggested that daily and monthly monitoring forms be rolled out in all program schools to sustain the positive work that has been done throughout the program, and to increase school-ownership and sustainability of SHN aspects.

Further, many of the endline targets set at baseline were not feasible based upon resources and abilities of the schools, the community, and Save the Children. For example, the baseline of schools that had access to safe drinking water, defined as two chlorinated liters per child per day, was 40 percent, but the endline target was 85 percent. This drastic increase is likely not feasible in general, but it is even more so considering that no Kiambu schools have a realistic way outside of government provision to get treated water or treat large amounts of water because of their rural location and lack of monetary resources. While the Kiambu government through the MOH is supposed to make chlorine available to schools, it is often not done in reality. Again, this underscores the need for initial and realistic measurements and targets so that it can be established how to achieve goals throughout program implementation.

Lastly, the endline evaluation found that SCI employee turnover was responsible for many of the struggles in transitioning from Phase I to Phase II. Phase I was implemented by Girl Child Network as a sub-grant, and the same staffing structure was maintained from Phase I to Phase II, except that in Phase II, Save the Children moved to direct implementation. The program would have benefitted from more exclusively allocated staff, specifically community mobilizers based in Nairobi and Kiambu working on a daily basis with schools, community health centers, and the local government. Employee turnover was detrimental to the continuity of program activities and led to delays as new employees were familiarizing themselves with the program and its goals. Further, the gap between the internal WASH technical and engineering staff and those running the SHN program was problematic, particularly because Phase II had a strong thematic focus on WASH. It is essential that Save the Children come up with a clear transition strategy to prevent direct and indirect effects on programs when there are gaps in employment. There needs to be clear records kept and clear SOPs. This is particularly the case for WASH construction, for which there was no SOP used by Save the Children Kenya at the time of program inception. This lack of established guidelines led to delays internally, and then externally, and is a huge reason why many of the construction activities of the program were still in process at the time of endline evaluation.

5.5 Limitations

A major limitation of this evaluation is the lack of a comparison group. A comparison group was not established or used during baseline in 2013 and comparison schools that did not receive the program, or that received parts of program activities, were not tracked. This was outside of the endline evaluators' control. That said, it is possible that some or all of the differences seen between baseline and endline results are due to external factors and not

necessarily due to the SHN program being evaluated here. Kenya, and particularly the Nairobi region, is a common place for health programs and interventions, and as such, it is possible that the schoolchildren were exposed to other interventions that influenced knowledge and behavior in some facet of their lives. The largest limitation of this type of evaluation is that a determination on the explicit effect or impact of the program itself as seen in the indicators cannot be conclusively made. However, given that no program school had a simultaneous SHN-specific program taking place within its walls during the same time period as the Save the Children SHN program, the idea of this program having some effect on changes must be given credence.

Further, since the endline evaluation used resampling of students, or in other words, sampled different students at endline than were sampled at baseline, it is possible that those students selected at endline were individually different from those selected at baseline. However, both baseline and endline used the same sampling method of systematic sampling using a sample population of individuals with the same base characteristics due to the shared commonality of attending the same school and being in the same grade. Therefore, the sampled groups should be categorically comparable. It must still be considered, though, that the possibility of substantial differences might exist and could have affected students' knowledge and behaviors outside of the exposure to the program. This sampling method was necessary due to the duration of the program (two years) and the decision at baseline to not track individual students and instead to rely on different individuals from the same cohort.

In addition, many of the indicator measures relied on schoolchildren self-reports of behavior due to the lack of monetary and human resources at both endline and baseline to conduct stringent observations. Further, all questions on knowledge relied on students'

memories, honesty, and unbiased answers, which all could contribute to inaccurate results. These biases could have inflated or deflated both baseline and endline results. Since the methodology was consistent across both evaluations, it is possible that even if these did affect absolute scores, the differences between baseline and endline were likely consistent and accurate. Further, the questions on the tools were designed to effectively and objectively measure changes in knowledge where necessary.

Because the endline evaluator was not involved in the baseline evaluation and the baseline data collection process in 2013, there was an inability to address the above limitations during the endline evaluation process. However, direct observations of facilities, infrastructure, and resources, which were provided as program activities, could be properly evaluated at endline to offset some of the limitations by providing additional insight and direct, unbiased information. Lastly, casual and unscientific interviews conducted with head teachers, SHC patrons, and groups of students helped to identify perceived improvements in knowledge, attitudes, and behaviors from both those directly targeted by the program and those (teachers, patrons) who oversaw the exposure. This is despite that set of information and data being unquantifiable and thus not reported directly in this evaluation's results.

5.6 Recommendations

Based on the above lessons learned, specific recommendations to inform future SHN programming in Kenya and beyond were formulated.

1. **Provide depth over breadth**

The number and scope of activities engaged in should be more limited and should target support in areas where clear, lasting differences can be made. The SHN program targeted an extremely wide range of health factors and corresponding activities. While many of these are

interrelated, it may have been more feasible and beneficial to target fewer issues and design more in-depth interventions to target those. With the lack of personnel assigned to the program in Kenya, it was very difficult to pay necessary attention to such a wide range of aspects.

2. **Focus on one type of location**

Nairobi and Kiambu schools proved to be very different from one another. Without multiple clear and established staff members assigned to each, it was very difficult to design program activities that would cut across the needs and resources of both diverse settings.

3. **Strengthen monitoring system, including using TIPs**

Programs should be designed with clear and accurate log frames, indicators should be appropriate and measurable, and regular monitoring should be conducted throughout the program duration. For Phase II, there were limited follow-ups made before endline to monitor whether the capacity building interventions were effective or whether the implementing partners (i.e., teachers who went through trainings and contractors doing infrastructure work) were effectively passing their components down the hierarchy.

In order to ensure interventions and solutions put in place are feasible, it is essential to base them on consultation with the program participants themselves. Therefore, it is recommended that programs use a participatory research strategy called Trials of Improved Practices (TIPs) in order to identify locally appropriate approaches to prolong the life and effectiveness of program activities. TIPs involves pretesting practices that the program will promote so that a complete, in-depth understanding of needs, preferences, and capabilities of beneficiaries can be established. This will increase ownership and participation by all stakeholders, particularly community members that might not otherwise be committed to an outside intervention. In addition, it will help program planners to understand solutions that are

feasible and those solutions that people are willing and able to take on, for example facilitating using ash to wash hands in rural areas where funds for soap are not available.

This type of monitoring could be used in future evaluations of this kind to track and assess endpoint goals throughout the program. This would allow for a smoother transition from baseline evaluation to endline evaluation. Although activity completion was monitored and tracked throughout the program, aspects of the program, such as the critical peer-to-peer education components, should have been tracked more clearly and consistently by Save the Children instead of relying on unofficial reports from program schoolteachers. A full and robust endline evaluation requires this detailed and consistent monitoring data from throughout program duration in order to ensure that baseline and endline are as comparable as possible and that impact can be measured to as realistic of an extent as possible. Lastly, a monitoring system would have been very beneficial to the Save the Children SHN program in Kenya because program staff and resources were often stretched very thin, and monitoring would have pinpointed areas and activities to prioritize to ensure that the program aspects most in need were covered.

4. **Complete an assessment of costs**

Consistent assessment of costs throughout the program allows for a more robust assessment of efficiency of the program and its activities at endline. While the budget was available for review, the budget tracking should include a more detailed breakdown, such as cost of various activities per school, in order to assess the efficiency of activities at certain schools as well as potentially varying implementation methods (if necessary, because of rural versus urban issues). Complete program costs per school should be tracked in order to assess program efficiency as well, especially since some program aspects were only designed to be completed in

certain schools. If assessed at endline, the cost per school and cost-effectiveness of various activities could be analyzed with the endline data results to potentially determine correlations between costs and improved knowledge, behaviors, and attitudes. Additionally, this assessment would allow for insurance that all program schools are individually performing in a proportional manner to the amount of money and resources being deposited into them.

5. **Increase commitment by parents and the community**

Families and communities need to be directly involved in program activities, as that will promote a sense of ownership and lead to increased willingness to provide resources. Through community mobilization and motivation, the impact of life-skills development will be extended to the entire community. When communities understand the importance of appropriate hygienic practices, it leads to an abundance of proper practices that students can then model their own behavior off of. In addition, monitoring of cleanliness and maintenance of program aspects needs to be done by all stakeholders, including the community. For example, SMC members can be invited to schools once a month to observe and participate in the monitoring practices in order to keep them involved and invested, as well as to prove to them that important SHN work is continuing at schools. Findings should then be shared with school administrators and government officials to further increase involvement.

6. **Increase departmental cooperation within the Save the Children country office**

As reported, some school facilities construction was still ongoing at the time of endline evaluation due to delayed payments to contractors and WASH staff hiring delays. In order to combat theses issues, Save the Children should focus on and prioritize WASH and other technical aspects of programs early on internally, as they are often complicated and complex. Further, complete staffing is essential to the full success of future programs, as there was often

departmental crossover with those working on the SHN program, and therefore, attention and time were at a premium for those juggling multiple projects and responsibilities.

7. Develop more effective high-level advocacy

This includes improving political support and prioritization for SHN activities. It is recommended that, in the future, government officials be approached with consistent, evidence-based messages that can aid in influencing their decisions. Efforts should also be put in place to convince decision-makers to organize and implement multiple visits to the school sites. When officials actually see for themselves what SHN work is being done at schools and see the importance of SHN to the children, they are more likely to provide their time and resources.

Further, senior managers within Save the Children who have past experience and connection with local government officials should be utilized as a bridge to contact and advocate for government support. This should begin at program inception, but can also be implemented as a program exit strategy. The inability during Phase II of Save the Children to effectively communicate with the government and continue a productive relationship with officials throughout played a huge role in the inability to conduct the only program activities that completely failed to be implemented. Lastly, Save the Children should work to advocate for strengthening governmental policies and systems that are already in place but are not being properly run, such as the chlorine distribution policy discussed in this report.

8. Keep an eye toward producing sustainable outcomes

For future SHN programming, exit strategies should be built into the design of programs from the beginning. Since an exit strategy is in essence a sustainability plan, its absence can lead to uncoordinated and haphazard implementation of exit activities near the program's end. Planning for exit from inception will help to provide time and a network for provisioning inputs

such as soap and facilities' maintenance, once the program has phased out. At inception, plans can be put in place to develop program elements that can empower key individuals and the community on the essence of sustaining the program's activities and continually furthering its impact. Early planning will ensure that the program does not only focus on developing the infrastructure, but also influences all stakeholders in order to ensure further progress of program goals after Save the Children phases out provided resources. This can include developing unique and specific self-monitoring plans and practicing the sustainability process throughout the program, ensuring that facilities and other infrastructure are in place early in the program timeline so that their use and maintenance can be observed and corrected. Lastly, continually involving school management committees and administrators, public health officials, and government officials, such as local employees who report to the MOE or MOH, will increase the chance of continued positive sustainable outcomes for SHN in schools.

5.7 Discussion Summary

The importance of health and nutrition and their impact on children's development cannot be overemphasized. School Health and Nutrition is a way to instill lifelong habits among children in terms of proper personal hygiene and sanitation practices. SHN is also an avenue that can be used to reach the community at large through a reverse flow-back effect where children provide a direct route to educate communities about health and nutrition. Through SHN, children can be empowered to develop positive self-esteem and self-assertiveness, which enables them to cope with the pressures of a socio-culturally diverse and highly competitive world. When children remain healthy, they are likely to perform more effectively and efficiently in school, and their attendance and retention in class improves. In the end, they are likely to develop greater aspirations, obtain better jobs, and improve their lives and the well-being of their communities.

Save the Children, along with its partners, has managed to provide support to marginalized children and communities with quality SHN education and activities. Implemented in 25 schools in Nairobi and Kiambu, the program has reached many beneficiaries during the Phase II period from 2013 to 2015. The main components of the program were in line with the FRESH framework and comprised of the following over-arching aspects as seen throughout this report:

- School-based delivery of health services;
- Safe school environment through the provision of WASH facilities at school;
- Promotion of healthy behaviors via school-based health activities surrounding oral health, WASH, handwashing, and menstrual hygiene; and
- School and community support from training of school and community committees on health and nutrition issues to garner support for all the activities discussed.

Through increased monitoring and evaluation activities, in addition to increased community involvement, the SHN program is sustainable far past the end of Phase II. Absence of the establishment of a program comparison group at baseline made it difficult to carry out certain types of robust impact analysis at endline, however the endline evaluation as reported herein clearly demonstrates an effectiveness of the Save the Children SHN program in completing its stated activities and meeting many of its indicator targets. It is possible that the program provided a legitimate benefit to children, schools, and other stakeholders involved, however the extent to which any benefit can be attributed to the program specifically is unclear. Recommendations stated within this evaluation report are designed to provide Save the Children in Kenya with a path to future success with SHN and a continued positive impact on children in Kenya for years to come.

5.8 Conclusion

This endline evaluation contributes to the existing evidence on SHN by providing further evidence on WASH in schools, peer-to-peer education, and health in schoolchildren in developing countries. The evaluation shows that SHN programs in developing countries can contribute to increased knowledge over time, and that behavior change if often more difficult to experience. Results of this evaluation confirm the literature that WASH in schools is critical to child health and that child health does affect both attendance and performance in school. Further, the evaluation demonstrated that SHN interventions using peer-to-peer education offer unique advantages and can increase satisfaction and the possibility of sustainability among students and teachers. However, SHN is more likely to succeed in a comprehensive program that targets specific health needs through many lenses, and partakes in routine and robust monitoring and evaluation by the implementing partners. Further, SHN content necessarily involves a wide range of simultaneous factors and activities, and the provision and maintenance of facilities and resources, particularly soap for handwashing and other WASH aspects, are key to the long-term success and sustainability of SHN programs in and around Nairobi, Kenya and beyond.

REFERENCES

1. Vandenbosch, T., Ndanyi, M., Barnett, W., Mungai, R., & Were, R. (2011). Participatory Development of National School Health Policies: Some Lessons Learned from Kenya. World Agroforestry Centre, Ministry of Education and VVOB.
2. *Improving School Health and Nutrition including Oral Health Education in Kenya: Phase II Annual Report*. (2014). The Wrigley Company Foundation and Save the Children. Nairobi, Kenya: Nazanine Scheuer.
3. *Improving School Health and Nutrition including Oral Health Education in Six Countries: Phase II Proposal*. (2013). Save the Children and the Wrigley Company Foundation. Westport, CT: Nazanine Scheuer
4. *Improving School Health and Nutrition including Oral Health Education in Kenya: Phase II Annual Report*. (2014). The Wrigley Company Foundation and Save the Children. Nairobi, Kenya: Nazanine Scheuer.
5. Muga, R., Kizito, P., Mbayah, M., Gakuruh, T. (2005). "Overview of the health system in Kenya". *Demographic and Health Surveys*. Chapter 2.
6. Maternal and Child Health: Kenya. (2011). The Partnership for Maternal, Newborn & Child Health. WHO. Retrieved from <http://www.who.int/pmnch/media/membernews/2011/20121216_kenyaparliament.pdf>
7. Republic of Kenya: National School Health Strategy Implementation Plan 2011-2015. (2011). Ministry of Public Health and Sanitation and Ministry of Education. Retrieved from <http://washinschoolsmapping.com/projects/pdf/KenyaNationalSchoolHealthStrategy>
8. UNICEF Water, Sanitation and Hygiene Annual Report 2008. (2009). UNICEF.
9. "Maternal, Neonatal and Child Health Policies, Strategies, Guidelines, and Tools". (2011). Toolkits by K4Health. Retrieved from < https://www.k4health.org/toolkits/kenya-health/maternal-neonatal-and-child-health-policies-strategies-guidelines-and-tools#block-views-toolkit-page-resources-block>
10. National Education Sector Plan 2013/2014 – 2017/2018 (NESP). Consolidated Version. 20 March 2014.
11. *Accelerating attainment of Health Goals: The Kenya Health Sector Strategic and Investment Plan (KHSSP), July 2012-June 2017*. (2012). Ministry of Medical Services and Ministry of Public Health & Sanitation.
12. *Kenya Health Policy 2014-2030: Towards attaining the highest standard of health*. (2014). Republic of Kenya Ministry of Health.
13. Kenya: Statistics. (2013). UNICEF. Retrieved from <http://www.unicef.org/infobycountry/kenya_statistics.html>
14. Vandenbosch, T., Ndanyi, M., Barnett, W., Mungai, R., & Were, R. (2011). Participatory Development of National School Health Policies: Some Lessons Learned from Kenya. World Agroforestry Centre, Ministry of Education and VVOB.
15. *Improving School Health and Nutrition including Oral Health Education Annual Report*. (2013). Save the Children.
16. *Maternal and Child Health: Kenya*. (2011). The Partnership for Maternal, Newborn & Child Health. Republic of Kenya.
17. Saboori, S., Greene, L. E., Moe, C. L., Freeman, M. C., Caruso, B. A., Akoko, D., & Rheingans, R. D. (2013). Impact of regular soap provision to primary schools on hand

washing and E. coli hand contamination among pupils in Nyanza Province, Kenya: a cluster-randomized trial. *Am J Trop Med Hyg, 89*(4), 698-708. doi: 10.4269/ajtmh.12-0387
18. End of Project Evaluation Report on Assessing the Impact of School Health and Nutrition Programmes in Kenya. (2013). Save the Children.
19. Freeman, M. C., Stocks, M. E., Cumming, O., Jeandron, A., Higgins, J. P., Wolf, J., . . . Curtis, V. (2014). Hygiene and health: systematic review of handwashing practices worldwide and update of health effects. *Trop Med Int Health, 19*(8), 906-916. doi: 10.1111/tmi.12339
20. Pruss-Ustun, A., Bartram, J., Clasen, T., Colford, J. M., Jr., Cumming, O., Curtis, V., . . . Cairncross, S. (2014). Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. *Trop Med Int Health, 19*(8), 894-905. doi: 10.1111/tmi.12329
21. Garn, J. V., Caruso, B. A., Drews-Botsch, C. D., Kramer, M. R., Brumback, B. A., Rheingans, R. D., & Freeman, M. C. (2014). Factors associated with pupil toilet use in Kenyan primary schools. *Int J Environ Res Public Health, 11*(9), 9694-9711. doi: 10.3390/ijerph110909694
22. UN General Assembly. (1989). *Convention on the Rights of the Child*. United Nations, Treaty Series, vol. 1577, p.3. Retrieved February 08, 2016, from <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx>
23. Ziegelbauer, K., Speich, B., Mausezahl, D., Bos, R., Keiser, J., & Utzinger, J. (2012). Effect of sanitation on soil-transmitted helminth infection: systematic review and meta-analysis. *PLoS Med, 9*(1), e1001162. doi: 10.1371/journal.pmed.1001162
24. Strunz, E. C., Addiss, D. G., Stocks, M. E., Ogden, S., Utzinger, J., & Freeman, M. C. (2014). Water, sanitation, hygiene, and soil-transmitted helminth infection: a systematic review and meta-analysis. *PLoS Med, 11*(3), e1001620. doi: 10.1371/journal.pmed.1001620
25. Peters, L. W., Kok, G., Ten Dam, G. T., Buijs, G. J., & Paulussen, T. G. (2009). Effective elements of school health promotion across behavioral domains: a systematic review of reviews. *BMC Public Health, 9*, 182. doi: 10.1186/1471-2458-9-182
26. *Final Report: World Education Forum*. (2000). UNESCO: Dakar, Senegal.
27. Langford, R., Bonell, C., Jones, H., Pouliou, T., Murphy, S., Waters, E., . . . Campbell, R. (2015). The World Health Organization's Health Promoting Schools framework: a Cochrane systematic review and meta-analysis. *BMC Public Health, 15*, 130. doi: 10.1186/s12889-015-1360-y
28. Jordanova, T., Cronk, R., Obando, W., Medina, O. Z., Kinoshita, R., & Bartram, J. (2015). Water, sanitation, and hygiene in schools in low socio-economic regions in Nicaragua: a cross-sectional survey. *Int J Environ Res Public Health, 12*(6), 6197-6217. doi: 10.3390/ijerph120606197
29. “FRESH Framework”. (2016). Schools & Health. The Partnership for Child Development. Retrieved from <http://www.schoolsandhealth.org/fresh-framework>
30. “Skills based health education”. (2016). Schools & Health. The Partnership for Child Development. Retrieved from <http://www.schoolsandhealth.org/skills-based-health-education>

31. Kagia, R., Lovelace, C., Holzmann, R. (2002). The FRESH Framework: Focusing Resources on Effective School Health, Hygiene, and Nutrition Programs: A Toolkit for Task Managers. Water and Sanitation Program, World Bank.
32. Peer Programs: Looking at the Evidence of Effectiveness, a Literature Review. (2016). Advocates for Youth. Retrieved from <http://www.advocatesforyouth.org/publications/publications-a-z/1856-peer-programs-looking-at-the-evidence-of-effectiveness-a-literature-review>
33. Mellanby, A. R., Rees, J. B., & Tripp, J. H. (2000). Peer-led and adult-led school health education: a critical review of available comparative research. *Health Educ Res, 15*(5), 533-545.
34. Medley, A., Kennedy, C., O'Reilly, K., & Sweat, M. (2009). Effectiveness of peer education interventions for HIV prevention in developing countries: a systematic review and meta-analysis. *AIDS Educ Prev, 21*(3), 181-206. doi: 10.1521/aeap.2009.21.3.181
35. *Raising Clean Hands: Advancing Learning, Health and Participation through WASH in Schools*. (2010). Joint Call to Action: UNICEF.
36. Onyango-Ouma, W., Aagaard-Hansen, J., & Jensen, B. B. (2004). Changing concepts of health and illness among children of primary school age in Western Kenya. *Health Educ Res, 19*(3), 326-339. doi: 10.1093/her/cyg034
37. Hawes, H., Scotchmer, C. (1993). *Children for Health*. Educational Resources Information Center (ERIC): U.S. Department of Education.
38. Kamm, K., Crabtree-Ide, C., Thomas, A., Ram, P. (2015). *Evaluation of the SOPO School Handwashing Promotion Programme: Nyanza and Rift Valley Provinces, Kenya*. Eastern and Southern Africa Sanitation and Hygiene Learning Series. UNICEF.
39. O'Reilly, C. E., Freeman, M. C., Ravani, M., Migele, J., Mwaki, A., Ayalo, M., . . . Quick, R. (2008). The impact of a school-based safe water and hygiene programme on knowledge and practices of students and their parents: Nyanza Province, western Kenya, 2006. *Epidemiol Infect, 136*(1), 80-91. doi: 10.1017/s0950268807008060
40. Christensen, G., Dentz, H. N., Pickering, A. J., Bourdier, T., Arnold, B. F., Colford, J. M., Jr., & Null, C. (2015). Pilot cluster randomized controlled trials to evaluate adoption of water, sanitation, and hygiene interventions and their combination in rural western Kenya. *Am J Trop Med Hyg, 92*(2), 437-447. doi: 10.4269/ajtmh.14-0138
41. Freeman, M. C., Clasen, T., Dreibelbis, R., Saboori, S., Greene, L. E., Brumback, B., . . . Rheingans, R. (2014). The impact of a school-based water supply and treatment, hygiene, and sanitation programme on pupil diarrhoea: a cluster-randomized trial. *Epidemiol Infect, 142*(2), 340-351. doi: 10.1017/s0950268813001118
42. Greene, L. E., Freeman, M. C., Akoko, D., Saboori, S., Moe, C., & Rheingans, R. (2012). Impact of a school-based hygiene promotion and sanitation intervention on pupil hand contamination in Western Kenya: a cluster randomized trial. *Am J Trop Med Hyg, 87*(3), 385-393. doi: 10.4269/ajtmh.2012.11-0633
43. Saboori, S., Mwaki, A., Porter, S., Okech, B., Freeman, M., & Rheingans, R. (2011). Sustaining school hand washing and water treatment programmes: Lessons learned and to be learned. *Waterlines, 30*(4), 298-311. doi: 10.3362/1756-3488.2011.040
44. Alexander, T. K., Oduor, C., Nyothach, E., Laserson, F. K., Amek, N., Eleveld, A., . . . Phillips-Howard, A. P. (2014). Water, Sanitation and Hygiene Conditions in Kenyan Rural Schools: Are Schools Meeting the Needs of Menstruating Girls? *Water, 6*(5). doi: 10.3390/w6051453

45. Alexander, K. T., Dreibelbis, R., Freeman, M. C., Ojeny, B., & Rheingans, R. (2013). Improving service delivery of water, sanitation, and hygiene in primary schools: a cluster-randomized trial in western Kenya. *J Water Health, 11*(3), 507-519. doi: 10.2166/wh.2013.213
46. Fonner, V. A., Armstrong, K. S., Kennedy, C. E., O'Reilly, K. R., & Sweat, M. D. (2014). School based sex education and HIV prevention in low- and middle-income countries: a systematic review and meta-analysis. *PLoS One, 9*(3), e89692. doi: 10.1371/journal.pone.0089692
47. School Health and Nutrition: Program Update. (2015). Save the Children: Issue 11.
48. History. (2016). Save the Children. Retrieved from <http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.6229507/k.C571/History.htm>
49. Who We Are. (2016). Save the Children. Retrieved from <http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.6146355/k.24E9/Who_We_Are.htm>
50. Kenya. (2016). Save the Children Kenya. Retrieved from <https://kenya.savethechildren.net/>
51. About Us. (2012). Wm. Wrigley Jr. Company. Retrieved from <http://www.wrigley.com/global/about-us.aspx>
52. Wrigley Company Foundation 2014 Summary. (2014). Wrigley Company Foundation.
53. Principles in Action. (2012). Wm. Wrigley Jr. Company. Retrieved from <http://www.wrigley.com/global/principles-in-action.aspx>
54. Our Principles in Action 2014: Infographic. (2014). Wrigley.
55. Freeman, M. (2015). Plausibility designs 4 – NEGDs & Choosing an eval approach [PowerPoint slides]. GH 560: Monitoring and evaluation of global public health programs.
56. DAC Criteria for Evaluating Development Assistance. (2016). OECD. Retrieved from <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>
57. Gathecha, G., Makokha, A., Wanzala, P., Omolo, J., & Smith, P. (2012). Dental caries and oral health practices among 12 year old children in Nairobi West and Mathira West Districts, Kenya. *The Pan African Medical Journal*, *12*, 42.
58. "Improved and unimproved water sources and sanitation facilities". Joint Monitoring Program (JMP). <http://www.wssinfo.org/definitions-methods/watsan-categories/>
59. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. (2015). *The Lancet, 385*(9963), 117-171. doi: 10.1016/S0140-6736(14)61682-2
60. Sample Size Methodology. (2016). MaCorr Research. Retrieved from <http://www.macorr.com/sample-size-methodology.htm>
61. Onyango, B. (2013). "Some Kenya Children Are Not in School Despite Free Primary Education". Population Reference Bureau. Retrieved from <http://www.prb.org/Publications/Articles/2013/kenya-school-education.aspx>
62. Working with National Government for Lasting Water, Sanitation and Hygiene (WASH) in Schools. (2015). CARE. Retrieved from <http://www.care.org/working-national-government-lasting-water-sanitation-and-hygiene-wash-schools>

APPENDIX A: STUDENT QUESTIONNAIRE

STUDENTS QUESTIONNAIRE

_____

Save the Children is a non-government, not-for-profit organization that works to create lasting positive impact on children's lives. We are asking you to answer and complete the following interview. Your answers, and the answers from your classmates, will help us identify areas of the program that we can improve in the future. The answers will also help us develop and plan for future programs that will help you stay healthy. Your answers will also help us see if our program works. Some of the questions are personal, but the answers you give will not be shown to anyone. You do not have to give us your name. Your honest answers to our questions will help us learn more and plan activities that will guide the behavior, attitudes, and practices of children like you. We especially want your answers because if everyone who is selected participates in the study, our information will be more useful.

Note to interviewer: *Clearly circle the child's response in the box next to the question. If the child's response is not listed, clearly print the response on the line next to "Other". If there are multiple answers possible and the child identifies at least one and then says "I don't know", after probing, do NOT mark "I don't know" as an answer. Only mark "I don't know" if that is the only response that the child gives for that question. If a student refuses to answer a question, please make a note that the child refused to answer. DO NOT mark "I don't know".*

This will be administered to pupils in classes 6 and 7

Use a pencil to fill the information needed below

PART I: PERSONAL INFORMATION

	Question	**Response**
1.10	Name of school	_____
1.11	Date of Interview	___/___/___ (dd/mm/yyyy)
1.12	Location of school *(Circle one response only)*	1. Nairobi 2. Kiambu
1.13	Type of school *(Circle one response only)*	1. Public 2. Non Formal School
1.14	Standard of pupil *(Circle one response only)*	1. Standard 6 2. Standard 7
1.15	Gender of pupil *(Circle one response only)*	1. Male 2. Female
1.16	Date of Birth of pupil	____/____/____ (dd/mm/yyyy) 88. I don't know (if does not know, enter years old: _____)
1.17	Are you a member of the school health club?	1. Yes 2. No
1.18	For how long have you been at this school?	1. Less than 1 year 2. 1-4 years 3. More than 5 years

PART II: KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) QUESTIONS

To assess children's knowledge, attitude, and behaviours towards various health issues.

	Question	**Response**
	ORAL HEALTH	
2.10	How often do you brush your teeth? *(Circle one response only; must be 2 or more times per day to be correct)*	1. Once a day 2. Twice a day 3. Once a week 4. Every other day 5. Rarely 6. Never 7. Other: _____ 88. I don't know

2.11	What do you use to brush your teeth most often? *(Circle one response only)*	1. Toothbrush only 2. Toothbrush and toothpaste 3. Mswak/Twig only 4. Mswak/Twig and toothpaste 5. I never brush my teeth 6. Other: _____ 88. I don't know
2.12	Using your finger, can you show me the steps you take to brush your teeth? ***Does not meet expectations:*** *does not know any actions to take* ***Meets expectations:*** *child uses finger as toothbrush and brushes teeth and tongue up and down* ***Exceeds expectations:*** *pretends to use toothpaste, brushes with finger up and down and in circles, brushes tongue*	1. Does not meet expectations 2. Meets expectations 3. Exceeds expectations
2.13	What is a tooth carry/decay? *(Circle all responses that apply. You may translate tooth carry/decay into Swahili should the child not understand the English term – "kuoza meno".)*	1. A spot on the tongue 2. A hole in the tooth 3. Other _____ 88. I don't know
2.14	What are the two main causes of tooth carry/decay? (*Probe, but do not say answers. Must say both answers to be correct.)*	1. Not brushing teeth regularly 2. Eating sugary foods and drinks 3. Other: _____ 88. I don't know
2.15	What could happen if you get a carry/decay in your tooth? *(Circle all responses that apply)*	1. Pain 2. Tooth falls out 3. Gum bleeding/swelling 4. Other: _____ 88. I don't know
2.16	Why **should** you brush your teeth? (*Probe about health effects if answering only about breath/color/stigma. Need first answer at least to be correct)*	1. To remove bacteria and maintain healthy teeth and gums 2. Clean teeth/remove plaque 3. Freshen breath 4. Keep teeth from discoloring 5. Other: _____ 88. I don't know
	HAND WASHING	
3.10	Did you wash your hands yesterday?	1. Yes 2. No
3.11	When did you wash your hands yesterday? *(Circle all responses that apply. Probe as needed: If the answer is "at meal time" – ask, "before or after?")*	1. Before eating/preparing food 2. After using the toilet 3. After playing/being in the dirt outside 4. After handling babies/diapers 5. Other: _____ 88. I don't know
3.12	When **should** you wash your hands? *(Circle all the responses that apply. Need 3 out of 4 to be correct)*	1. Before eating/preparing food 2. After using the toilet 3. After playing/being in the dirt outside 4. After handling babies/diapers 5. Other: _____ 88. I don't know

3.13	The last time you washed your hands, what did you use? *(Circle one response only)*	1. Water and soap 2. Water only 3. Water and ash 4. Water and sand 5. Other: _____ 88. I don't know
DRINKING WATER		
4.10	Do you have access to drinking water at school every day?	1. Yes 2. No 88. I don't know
4.11	Why is it important to have safe drinking water?	1. Helps prevent diseases and their symptoms (diarrhea, cholera, typhoid, etc.) 2. Other: _____ 88. I don't know
SANITATION/DIARRHEA Define diarrhea prior to asking the following questions. Be sure to define diarrhea using local terms and according to how it is discussed in the lessons and in the community. One definition is: "Diarrhea is loose or watery poo-poo more than three times a day. Diarrhea may be accompanied by cramps, bloating, nausea, and an urgent need to go to the toilet."		
5.10	Have you had diarrhea in the last two weeks?	1. Yes 2. No 3. I don't know/can't remember
5.11	Where did you **defecate (**poo-poo or "make a long call") the last time you **defecated** during school? *(Circle one response only)*	1. School toilet /latrine 2. At school behind buildings 3. In field/bush/garden near school 4. Neighbouring toilets/latrines 5. In paper bag and threw in the garbage dump 6. Dug a hole in the ground and buried 7. Other: _____ 88. I don't know
5.12	When you need to poo-poo or "make a long call" at home, where do you usually go? *(Circle all the responses that apply)*	1. Toilet/latrine at home 2. Hole in the ground 3. Behind buildings or in field near home 4. Other: _____ 88. I don't know
5.13	Why is it important to defecate in the school latrines? *(Circle all responses that apply. Must get at least 1 to be correct. Probe : "Is there anything else?")*	1. Helps prevent disease 2. Helps prevent diarrhea 3. Helps prevent spread of worms 4. Other: _____ 88. I don't know
5.14	What are the causes of diarrhea? (*Circle all responses that apply. Probe: "Is there anything else that causes diarrhea?" Please mark all that are mentioned.)*	1. Drinking dirty water 2. Not washing hands 3. Unclean latrines 4. Other: _____ 88. I don't know
5.15	How do you prevent getting diarrhea? *(Circle all responses that apply. Please probe and mark all that are mentioned.)*	1. Washing hands after using latrine 2. Washing hands before eating 3. Drinking clean water 4. Washing food before eating 5. Other: _____ 88. I don't know

SMOKING		
6.10	What do you think of smoking tobacco? *(Circle one response only. If the answer is #1, skip to Q7.10)*	1. It is good/okay 2. It is bad/not okay 3. It is "cool" and fashionable 4. It is for adults 5. Other: _____ 88. I don't know
6.11	Why might smoking be bad for you? *(Circle all the responses that apply. Need to answer with #1 to be correct)*	1. It is harmful to health (causes cancers, heart disease) 2. It is addictive 3. It stains the teeth and causes bad breath 4. It is expensive 5. Other: _____ 88. I don't know

HIV/AIDS		
7.10	Have you heard of HIV and AIDS?	1. Yes 2. No (if no, skip to Q8.10)
7.11	Does HIV have a cure?	1. Yes 2. No 88. I don't know
7.12	How is HIV transmitted? *(Circle all responses that apply)*	1. Sexual intercourse 2. Blood to blood contact (including blood transfusion and sharing sharp objects) 3. From mother to child during pregnancy or breastfeeding 4. Other: _____ 88. I don't know
7.13	How can you prevent HIV transmission? *(Circle all responses that apply)*	1. Abstain from sex 2. Use condoms 3. Be faithful 4. Do not share needles, razor blades, and other sharp objects 5. Other: _____ 88. I don't know
7.14	Is it possible to tell if a person has HIV just by looking at them?	1. Yes 2. No 88. I don't know

HEALTH AND NUTRITION		
8.10	What can you do to stay healthy in school? *(Circle all responses that apply)*	1. Hand washing with soap 2. Deworming 3. Eating healthy 4. Drinking clean water/eating clean foods 5. Using clean toilets 6. Brushing teeth 7. Other: _____ 88. I don't know
8.11	In your opinion, does being healthy affect academic performance?	1. Yes 2. No
8.12	What is the state of health and nutrition in your school: excellent (9-10), good (7-8), average (4-6), poor (1-3)?	1. Excellent 2. Good 3. Average/Fair 4. Poor
8.13	Have you ever been dewormed?	1. Yes 2. No (if no, skip to Q8.16)

8.14	If so, how long ago were you last dewormed?	1. Within the last year 2. 1-3 years ago 3. 3-5 years ago 4. More than 5 years ago
8.15	Who dewormed you? *(Circle one response only)*	1. Teacher in school 2. Health worker in school 3. Parent at home 4. Health worker at clinic 5. Other: _____ 88. I don't know
8.16	Did you have something to eat yesterday during the school day?	1. Yes 2. No
8.17	How many times do you usually eat in a day? *(Circle one response only)*	1. Once 2. Twice 3. Three times 4. Varies 5. Other: _____ 88. I don't know
8.18	What do you do to safely prepare food? *(Circle all responses that apply)*	1. Wash hands 2. Clean food with safe water before preparing 3. Other: _____ 88. I don't know
8.19	Do you eat fruits or vegetables on most days?	1. Yes 2. No
8.20	The last time you ate a fruit, did you wash it first?	1. Yes 2. No 88. I don't know / can't remember

PUBERTY **"Now, I am going to ask you questions about puberty. Your answers will not be shared with anyone. Your honest answers will help us better understand the health needs of school children. I appreciate your honesty in answering these questions. If you are uncomfortable at any point, you may choose to skip the question."**		
9.10	What are the changes that occur in <u>GIRLS</u> during puberty? *(Probe: more than one answer is possible, but don't read the lists, circle all that are mentioned)*	1. Gain weight on the hips; body becomes rounder and more womanly 2. Breast growth 3. Starting menstruation 4. Hair growth under arms & around genitalia 5. Pimples 6. Other: _____ 88. I don't know
9.11	What are the changes that occur in <u>BOYS</u> during puberty? *(Probe: more than one answer is possible, but don't read the lists, circle all that are mentioned)*	1. Voice gets deeper 2. Hair growth on face, chest, under arms & around genitalia 3. Growth spurt (height, muscle, weight) 4. Pimples 5. Other: _____ 88. I don't know

MENSTRUATION (GIRLS ONLY; SKIP SECTION IF BOY) **"Now, I am going to ask you questions about menstruation. Your answers will not be shared with anyone. Your honest answers will help us better understand the health needs of school children. I appreciate your honesty in answering these questions. If you are uncomfortable at any point, you may choose to skip the question."**		
9.12	Have you started menstruation yet?	1. Yes 2. No (If no, skip to Q9.14)
9.13	How many days did you miss of school in the past month because of problems related to menstruation?	1. 0 days 2. 1-3 days 3. 4-7 days (one week) 4. 8-14 days (two weeks) 5. More than two weeks 88. I don't know
9.14	Why do you think girls sometimes miss school when they have their periods? *(Circle all responses that apply)*	1. Feel too tired or are in too much pain 2. Other kids make fun of them at school 3. No separate clean latrines for girls to use at school when menstruating 4. Do not have materials to control the flow of menstrual blood 5. No bins for used pads in school latrines 6. Other: _____ 88. I don't know any who miss school
9.15	Has anyone explained to you how to manage your body during your menstrual periods?	1. Yes 2. No
9.16	What are the methods you know of to protect yourself when you have periods? *(Circle all responses that apply)*	1. Bits of cloth/rags/tissue paper 2. Disposible sanitary pad 3. Tampon 4. Other: _____ 88. I don't know any
9.17	Are sanitary bins readily available in your toilets at school?	1. Yes 2. No

I want to thank you for giving me your time to answer these questions.

Interviewer/Enumerator Name:_____ Signature:_____

Checked by Field Supervisor:

Name _____ Signature _____ Date _____

APPENDIX B: HEAD TEACHER QUESTIONNAIRE AND INTERVIEW GUIDE

HEAD TEACHER/TEACHER QUESTIONNAIRE _____

Introduction
This questionnaire will be filled by the survey team with the support of the Head Teacher, their deputies, or the Health Club Patron. Most of the information is in records and registers. Get this if it is deemed reliable. Otherwise, the information can be given by the Head Teacher or a deputy teacher as long as they understand issues related to the School Management Committe, with the support of the Health Club Patron, where records are not available.
Note to interviewer: Clearly circle the response in the box next to the question. If the response is not listed, clearly print the response on the line next to "Other". If there are multiple answers possible and the interviewee identifies at least one and then says "I don't know", after probing, do NOT mark "I don't know" as an answer. Only mark "I don't know" if that is the only response that the interviewee gives for that question.

Part I: General Information

	Question	**Response**
1.10	Name of respondent	Surname: First: Second:
1.11	Respondent's title	1. Head teacher 2. Deputy teacher 3. School Health Club Patron 4. Senior Teacher
1.12	Name of the school	_____
1.13	Location of school *(Circle one only)*	1. Nairobi 2. Kiambu
1.14	Date of interview	_____ (dd/mm/yyyy)
1.15	How many teachers do you have in this school?	**TSC** F= M= **SMC/PTA** F= M= **ECD** F= M=

Part II: Other health interventions received by the school
Ask the Head teacher what other health interventions have been provided in school. Probe for interventions such as deworming, micronutrient supplements, food, sanitary pads, first aid kits, health training. List the health interventions in the table below:

Health intervention	**Who benefits**	**When**
Deworming		
Vitamin A Supplementation		
Multivitamin supplementation		
Food support		
Sanitary pads/towels		
First aid kits		

Health training		
Nutrition Training		
Others (list below):		

Part III: Knowledge, Attitude, and Perception on School Health and Nutrition Program
I will be asking about your attitude, opinion, and perception on the relevance of health and nutritional issues in education and school

	Question	**Responses**
3.10	What are some of the health factors that contribute to good attendance and performance in your school? *(Circle all responses that apply)*	1. Hand washing with soap or ash or sand 2. Deworming 3. Supplementation with micronutrients 4. Drinking treated water 5. Clean toilets 6. School feeding program 7. First aid kits in school 8. Other: _____ 88. I don't know
3.11	In your opinion, how does school health and nutrition influence academic performance? *(Circle all responses that apply)*	1. Increase performance 2. Reduce absenteeism 3. Increase retention rate 4. Increase participation in school activities 5. Reduce diseases and illnesses among schoolchildren 6. Other: _____ 88. I don't know
3.12	Who are the main stakeholders in ensuring that health and nutritional levels are improved in this school? *(Circle all responses that apply)*	1. School management committe 2. Government ministries 3. Teachers 4. Parents 5. Non-governmental organizations 6. Community organizations 7. Other: _____ 88. I don't know
3.13	How can you rate the state of health and nutrition in your school? *(Circle only one response. Probe on why they rate it that way?)*	1. Very Poor 2. Below Average 3. Average 4. Above Average 5. Excellent
3.14	Have any pupils in your school been de-wormed?	1. Yes 2. No *(if "No", skip to Q3.18)*
3.15	If yes, when was the last time the children were de-wormed?	____/____/____ (dd/mm/yy) _____ (*if no record, write approximate month/year*)

3.16	Who sponsored the deworming?	_____(list the name of the agency or organization)
3.17	Approximately how many children were dewormed?	_____
3.18	Have children in the kindergarten (ECD) been supplemented with vitamin A?	1. Yes 2. *No (if "No", skip to Q3.20)*
3.19	Approximately how many children in the kindergarten (ECD) were supplemented with vitamin A?	_____
3.20	Have any of your teachers been trained in health education and oral health?	1. Yes 2. No *(if "No", skip to Q3.22)*
3.21	If yes, when was the training?	_____ (dd/mm/yyyy)
3.22	What challenges do you encounter in ensuring health and nutrition issues in your school are up to standard? *(Circle all responses that apply)*	1. Lack of policy guidelines on school health and nutrition 2. Lack of funds from the government 3. Lack of financial support from parents towards health and nutrition in schools 4. Lack of WASH facilities 5. Lack of adequate and safe water in school 6. Lack of medical and nutritional services in school 7. Lack of training on health and nutrition in school 8. Other: _____ 88. I don't know
3.23	In your opinion how can these challenges be mitigated? *(Circle all responses that apply)*	1. Dessimination of policy guidelines on school health and nutrition 2. Allocation of more funds towards school health and nutrition by the government 3. More parental support for school health and nutrition 4. An increase in projects from non-governmental organizations 5. Other: _____ 88. I don't know
3.24	In your opinion, what should school health and nutrition interventions encompass? *(Circle three most important interventions)*	1. Deworming 2. Micronutrient supplementation 3. Provision of hand washing facilities with soap 4. Teacher training on health and/or nutrtition issues 5. Provision of toilets/latrines 6. Provision of water supply and storage tanks 7. Oral health education 8. Mobile outreach clinics in school 9. Health education 10. Nutrition education 11. Growth monitoring 12. Other: _____ 88. I don't know
3.25	Who is responsible for maintenance and repairs to WASH facilities at your school *(toilets, hand washing stands, and drinking water provisions)*? *(Circle all responses that apply)*	1. Head teacher 2. Teachers 3. Students 4. Cleaner/Janitor 5. Outside repairman 6. Other: _____

3.26	Who is responsible for the cleaning of the WASH facilities? *(Circle all responses that apply)*	1. Head teacher 2. Teachers 3. Students 4. Cleaner/Janitor 5. Other: _____
3.27	How do you dispose of garbage at the school?	1. Burn 2. Throw in pit 3. Bury 4. Other: _____

Part IV: School Health Club and School Management Committee

I will be asking about the existence and the relevance of a school health club and the School Management Committee

	Questions	**Responses**
4.10	Is there a health club in this school?	1. Yes 2. No
4.11	How often does the school health club meet? *(Circle only one response. Must meet at least once a term to be considered "Active".)*	1. Weekly (once every five school days) 2. Monthly (once every 21 school days) 3. Termly (once every 63 school days) 4. Never 5. Other: _____
4.12	Does the school have a development plan for school improvement?	1. Yes 2. No
4.13	What are some of the school improvement plans as listed in the school development plan? *(Circle all responses that apply. If 1 SHN project/activity is listed, then it is correct.)*	1. Provide hand washing facilities with soap or ash 2. Conduct deworming 3. Conduct supplementation of pupils with micronutrients 4. Do referals to hospitals 5. Provide treated driniking water 6. Conduct cleaning of toilets 7. Implement school feeding program 8. Hold open school health days 9. Provide and manage first aid kits in the school 10. Improve or build toilets/latrines 11. Other: _____ 88. I don't know
4.14	What are the health and nutrition objectives listed in the school development plan that you have managed to achieve? *(Need to list at least one to be correct.)*	_____
4.15	What are some of the factors that contributed to the failure of meeting certain health and nutrition objectives listed in the school developemnt plan? *(Circle all responses that apply)*	1. Lack of policy guidelines on school health and nutrition 2. Lack of funds from the government 3. Lack of financial support from parents towards health and nutrition in schools 4. Lack of adequate and safe water in school 5. Other: _____ 88. I don't know
4.16	How many times in the last academic year (2014) was school health discussed with parents/in parents' forums? *(Circle only one reponse. Must be at least 3 times to be correct)*	1. 1 time 2. 2 times 3. 3 times 4. More than 3 times 5. Never 88. I don't know/don't remember

4.17	Do you receive active suppot from the community for school health activities?	1. Yes 2. No *(if "No", skip to Q4.20)*
4.18	If yes, what type of support do you receive? *(Circle all responses that apply)*	1. Financial support 2. Help with construction 3. Time given to organize activities 4. Encouragement 5. Other tangible resources 6. Other: _____ 88. I don't know
4.19	If yes, who is the support from?	1. Parents 2. Community groups 3. Community leaders and officials 4. School officials 5. Faith based groups 6. Other NGOs 7. Other: _____ 88. I don't know
4.20	Has there been any impact on the number of days children miss due to illness since project implementation?	1. Yes 2. No
4.21	How often do you have contact with the SCI project implementation unit?	1. More than once a month 2. Once a month 3. Once a term 4. Once a year
4.22	When was the last vist by the Save the Chilcren International unit?	_____

Part V: Open Interview Questions

5.10. What results do you think the School Health and Nutrition program has brought to this school?

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5.11. How children are generally educated about hygiene and sanitation in this school? *(Probe: in which classes, how often, who does it, are they trained etc.)*

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5.12. What changes have you observed in children's hygiene and sanitation knowledge and practices since the start of the program? Is there a difference between girls and boys? Are there differences among age groups?

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5.13. What changes have you observed in children's nutrition knowledge and practices since the start of the program?

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5.14. Do you have any recommendations to make hygiene and sanitation promotion projects more effective in your school?

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5.15. Describe the toilet, hand washing station, and drinking water provision conditions at your school before and after the project. What further recommendations would you make to improve them and the related practices of the children? (*Both structure and maintenance: - i.e. gutter, drainage, tanks, etc*.) *{Recommendations on improving interventions and related children practices}*

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5.16. Have there been any problems with maintenance and cleaning of WASH facilities?

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5.17. Is there any budget to purchase soap and other tools, and to make small repairs to WASH facilities?

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5.18. What other recommendations do you have for improving the water, sanitation, hygiene, and nutrition situation in your school and the surrounding community? *(Note: General recommendations)*

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Thank you for giving me your time to interview you.

Interviewer Name: _____

Signature: _____

Checked by:

Name: _____ Signature: _____ Date: _____

APPENDIX C: SCHOOL FACILITY/OBSERVATION CHECKLIST

SCHOOL FACILITY SURVEY CHECKLIST

This information will be gathered by SCI staff and the survey team through observation using the checklist below. The team should be supported by the Head Teacher, a Deputy Teacher or the School Health Club Patron.

Part I: Basic Information

	Question	Response
1.10	Name of the school	_____
1.11	Location of school	1. Nairobi 2. Kiambu
1.12	Person who led observation	_____
1.13	Date of Observation	___/___/___ (dd/mm/yyyy)

Part II: Observation of the school environment

This is done by the team by walking around the school and assessing the school environment. Please record responses/codes in the right hand column.

	Question	Enter answer
	Questions about the school compound	
2.10	Is the school yard free of standing/dirty water?	1. Yes 2. No
2.11	Is the school yard free of trash?	1. Yes 2. No
2.12	Are classrooms free of trash and relatively clean?	1. Yes 2. No
	Questions about toilets	
3.10	Are there improved/suitable toilets or latrines in the school?	1. Yes 2. No
3.11	Are there separate toilets or latrines for girls and boys?	1. Yes 2. No
3.12	How many girl toilets or latrines are there?	_____
3.13	How many boy toilets or latrines are there?	_____
3.14	How many urinals are there?	_____
3.15	What type of facilities are there? *(Circle all that apply)*	1. Flush toilets 2. Pit latrines 3. Mobile toilets 4. Urinals 5. Other: _____
3.16	Is water available to flush the toilets?	1. Yes 2. No 3. No flush toilets
3.17	Is there a strong odor in the toilets?	1. Yes 2. No
3.18	Do any of the toilets have feaces around the hole or on the platform?	1. Yes 2. No
3.19	Are there any feaces outside and/or around the latrine?	1. Yes 2. No
3.20	Are there any wiping agents available in the toilets?	1. Yes 2. No

3.21	How many toilets have wiping agents?	_____
3.22	Do any of the girl toilets have sanitary disposal bins?	1. Yes 2. No
3.23	How many sanitary disposal bins are there?	_____
3.24	Do all toilets have doors that lock from the inside?	1. Yes 2. No 3. Some
3.25	Are there seperate toilets/latrines for teachers?	1. Yes 2. No
3.26	How many toilets are there for teachers?	_____

	Questions about access to water	
4.10	Is water available at the school?	1. Yes 2. No
4.11	What type of water is available? *(Circle all that apply)*	1. Tap with running water 2. Water storage tank 3. Piped rain water 4. Well 5. Hand pump 6. River/stream 7. Other: _____
4.12	Is the water treated for drinking?	1. Yes 2. No
4.13	If yes, how is the water treated?	1. Chlorination 2. Bleaching 3. Filtration 4. Boiling 5. Not treated 6. Other: _____
4.14	In approximate, how many liters of water available are safe for drinking? *(Answer must be at least 2 liters/child/day to be correct)*	_____
4.15	Does the school have water storage facilities?	1. Yes 2. No
4.16	How many water storage tanks does the school have?	Functional: Non-functional:
4.17	Is used water (such as for hand washing) funneled anywhere after use to avoid breeding mosquitos?	1. Yes 2. No
	Questions about hand washing facilities	
5.10	Are there any hand washing facilities at the school?	1. Yes 2. No
5.11	How many total hand washing facilities are there?	_____
5.12	How many hand washing facilities are operational (including water)?	_____
5.13	How many operational hand washing facilities have soap (or a suitable alternative)?	_____
5.14	How many hand washing facilities are close to the latrines? *(Close enough where students would not be seen walking from the latrine to the hand washing)*	_____
	Questions about maintenance	
6.10	How often are the toilets cleaned?	1. Every day 2. A few times per week 3. A few times per month

6.11	Do the children participate in cleaning and maintenance of toilets and hand washing stations?	1. Yes 2. No
6.12	Do parents provide any financial contribution toward the sanitation and water facilities at the school?	1. Yes 2. No

7.10. List other issues you (survey team member) observed that are not listed above:

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I want to thank you for your support and time in aswering these questions.

Interviewer/Enumerator Name: _____

Signature: _____

Checked by:
Name: _____ Signature: _____ Date: _____

APPENDIX D: EDUCATION DATA CHART

EDUCATION DATA

School Name: _____ Location: _____

Name of person who assisted: _____ Date: _____

Please enter the number of boys and girls **enrolled** in school at the start of the school year 2015 (current school year), **attendance in May**, and the **number of repeaters** during the education year.

Grade	Total Enrolment In Education Year 2015		Attendance In 4th May, 2015		Attendance In 25th May, 2015		Students who dropped out of the school since the start of the academic year		Repeaters during education year 2015/2016	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
ECD										
1										
2										
3										
4										
5										
6										
7										
8										
Total										

**Repeaters include all those students who are repeating the academic year in the same grade due to failure in examination or any other reason*

Please enter the number of boys and girls in each standard who had a mean score of 250 marks and above in the last two terms (September to November 2014 and January to March 2015). Be very keen to fill in the correct data in the correct calendar period.

	Sep to Nov 2014 (Third Term Last Year)			**Jan to Mar 2015 (First Term This Year)**		
Standard	Boys	Girls	Total	Boys	Girls	Total
ECD						
Special Unit						
1						
2						
3						
4						
5						
6						
7						
8						
Total						

APPENDIX E: STUDENT FOCUS GROUP DISCUSSION GUIDE

FOCUS GROUP DISCUSSION GUIDE FOR STUDENTS

Hi everyone! How are you all today? Thank you for joining this discussion. We are here to learn your thoughts about student's health and nutrition. We are also trying to understand more about the water, hand washing stations, and toilets at your school. We will use the information you tell us to help improve future programs for other students and schools.
You can choose whether or not to participate in the focus group and stop at any time. Although the focus group will be tape recorded, your responses will remain anonymous and no names will be mentioned in the report.
There are no right or wrong answers to the focus group questions. We want to hear many different viewpoints and would like to hear from everyone. We hope you can be honest even when your responses may not be in agreement with the rest of the group. In respect for each other, we ask that only one individual speak at a time in the group and that responses made by all participants be kept confidential.

Instructions for facilitator: Probes are only to be asked after the participants have given their own answers and only if they didn't mention or hadn't discussed the probes.

	Interviewer Instructions
I want to play a game to start. Please tell us your name, your favorite color, your favorite animal, and why you like the animal. I'll start. My name is XXX, my favorite color is XXX, my favorite animal is XXX because XXX.	Take a ball or something soft and get kids to introduce themselves and throw to someone else – make sure that they don't throw to the people sitting beside them.
"Okay, now I'm going to ask you all some questions about health and nutrition at your school." 1. What are all your thoughts about the overall health at your school? Are the students healthy in general? Do the teachers make sure that everyone stays healthy at school?	**Introductory Question** Try to get them talking and discussing the various aspects of health on their own. PROBE: Cleanliness of school Sickness or injury among students Facilities, including toilets and hand washing stations
2. What do you do to be clean? Why is it good to be clean?	**Key Question – Practices** PROBE: How do you keep your hands/body/teeth/hair/clothes clean? What do you do after you use the toilet? Do you use soap/ash/mud?
3. Can you all talk about the water situation at school? Where are the places that students get drinking water? Why do they get drinking water from those places? How do they collect the water? Is there always water? Do you like the water? Why or why not? What do students say about the water at school?	**Key Question – Accessibility** PROBE: Is water clean and convenient? No water Issues with water tank Broken taps? Quality of water Cups to collect water? Hands or mouth?
4. Where do students wash their hands at school? Why? Why not other places?	**Key Question – Accessibility** PROBE: Are stations near enough to the toilets/classrooms? Is there always enough water? Is there always soap/ash/mud? Are they sometimes too crowded?
5. When do students wash their hands? Why? What do you use to clean/wash your hands?	**Key Question – Practices** PROBE: After going to the toilet Before eating After class/playing in the yard With soap/ash/mud and running water
6. What do students think of the toilets at school?	**Key Question – Acceptability** PROBE (If yes):

(If they like it): Why? (If they don't like it): Why not?	Clean Convenient PROBE (If no): Dirty Smells No privacy Too far
7. List the places that students go to relieve themselves. Does anyone ever go pee or poop outside the toilet? Why do you think they do that, if so? Do you ever wait to go to the toilet until you are home? Why?	**Key Question – Accessibility** PROBE: Dirty Smells No privacy
8. What illnesses are common kids at your school? How do you/they get these diseases? How can these diseases be prevented?	**Key Question – Knowledge** PROBE: Diarrhea Colds Fever PROBE: Dirty water/hands Other sick people Flies/mosquitoes Dirty food PROBE: Hand washing/washing food Boiling water Cleaning
9. Where do kids your age learn about hygiene? If school, what do your teachers tell you about hygiene?	**Key Question – Communication** PROBE: Home School Clinic From friends
	Key Question – School Education PROBE: In which classes? Do you have a hygiene corner? School Health Clubs?
10. What are some of the activities related to health that you do in school? What do students think about the School Health Club?	**Key Question – Program Impact**
11. Do you ever share health and nutrition messages with your family? Friends? Siblings? Peers?	**Key Question – Program Impact**
12. What do you like most about learning about health in school?	**Key Question – Program Impact**
Thank you for your participation. We really appreciate your time and responses. Please let us know if you have any questions about this. Have a great day!	