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**Applying football-based behavior change interventions to
the water and sanitation sector in Uganda:**
Effects of implementation intentions on handwashing in
primary school students

MASTERARBEIT

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Abstract

Global access to clean drinking water, sanitation and hygiene (WASH) and the burden of WASH-related diarrhoea, which is among the major contributors to global child mortality, represents one of the biggest challenges for the public health system. Handwashing with soap (HWWS) has shown to be one of the most cost-effective interventions to improve public health and yet, global prevalence rates of HWWS are alarming. Recent research indicates that behavior change interventions are likely to have greater impact when they not just rely on information but also provide planning strategies for where, when and how to perform a certain goal-related behavior. The presented research therefore tests if implementation intentions can increase the impact of a football-based WASH sensitizing program on HWWS amongst primary students in Northern Uganda. A Football4WASH intervention group of 28 students was compared with an intervention group of 35 students who complemented the Football4WASH Training with the forming of two “if-then” plans and a control group of nine students. A change of the behavior of HWWS was measured with a self-report questionnaire conducted before and 10 days after the respective intervention. The number of HWWS per day and the identification of the most critical situations for HWWS were used as indicators of handwashing-practice. Students who additionally applied the implementations intentions did not report a larger increase of HWWS and they did not improve their performance of identifying the relevant situations more than the students in the other groups. The fact, that it cannot be concluded that the intervention with the additional implementation intentions is in this particular setting superior to the standard intervention, even though, children did benefit from the instructions of the provided “if-then” plans, indicates a need for further studies, investigating the application of implementation intentions in the context of handwashing-practice. In addition, future research urgently needs to work on the development of applicable and reliable indicators for handwashing-behavior.

Zusammenfassung

Weltweiter Zugang zu sauberem Trinkwasser, Sanitärversorgung und Hygiene (WASH) sowie die Belastung von damit in Verbindung stehenden Durchfallerkrankungen, die immer noch eine Hauptursache globaler Kindersterblichkeit sind, stellen eine der größten Herausforderungen für das weltweite Gesundheitssystem dar. Händewaschen mit Seife (HWWS) ist eine der kostengünstigsten Möglichkeiten um die öffentliche Gesundheit zu verbessern, doch weltweite Zahlen über das Vorkommen von HWWS sind alarmierend. Aktuelle Forschung legt nahe, dass Interventionen zur Verhaltensänderung eine größere Wirkung haben, wenn sie sich nicht ausschließlich auf Wissensvermittlung fokussieren, sondern auch Planungsstrategien an die Hand geben, die andeuten wann, wo und wie ein bestimmtes, zielrelevantes Verhalten gezeigt werden soll. Daher testet die vorgelegte Studie, in wie weit Implementation Intentions die Wirkung eines fußballbasierten Sensibilisierungsprogrammes an Grundschulen im Norden Ugandas vergrößern können. Eine Football4WASH Trainingsgruppe mit 28 Teilnehmern wurde dafür mit einer 35-köpfigen Teilnehmergruppe verglichen, die ergänzend zu dem Football4WASH Training noch zwei „wenn - dann“ Pläne bekommen hat und außerdem mit einer Kontrollgruppe mit neun Teilnehmern. Eine Verhaltensänderung bezüglich des Händewaschens mit Seife wurde mit einem Selbstauskunfts-Fragebogen vor der Intervention und zehn Tage danach gemessen. Die Anzahl des Händewaschens pro Tag sowie das Erkennen, der für das Händewaschen wichtigsten Situationen, wurden als Indikatoren für das Handwaschverhalten gemessen. Schüler die zusätzlich Implementation Intentions angewandt haben, berichteten von keiner größeren Steigerung in der Anzahl des täglichen Händewaschens und verbesserten sich nicht mehr bei dem Erkennen der kritischen Situationen wie die Schüler in den anderen zwei Gruppen. Die Tatsache, dass wir nicht folgern können, dass das Football4WASH Training mit der Ergänzung der Implementation Intentions zu besseren Ergebnissen wie die Standardintervention geführt haben, obwohl die Schüler dennoch von der Anleitung der zur Hand gegebenen Pläne profitieren konnten, verdeutlicht, dass ein Bedarf an weiterer Forschung besteht, die die Anwendung und Wirkung von Implementation Intentions im Kontext des Handwaschverhaltens untersucht. Darüber hinaus bedarf es dringend einer Weiterentwicklung von zuverlässigen und universell anwendbaren Indikatoren für Handwaschverhalten.

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List of Abbreviations

- WASH: Water, Sanitation and Hygiene
- HWWS: Handwashing with soap
- UN: United Nations
- WHO: World Health Organization
- UNICEF: United Nations Children's Fund
- CHC: Community Health Clubs
- CLTS: Community-led Total Sanitation
- PHAST: Participatory Hygiene and Sanitation Transformation
- CHAST: Child Hygiene and Sanitation Transformation
- SHC: School Health Club
- SWC: School WASH Club
- BCT: Behavior Change Technique
- RANAS: Risk, Attitudes, Norms, Abilities, Self-Regulation
- F4W: Football for WASH
- FW4O: Football for WASH only
- F4W+II: Football for WASH plus Implementation Intentions
- VcAU: Viva con Agua Uganda
- WHH: Welthungerhilfe
- WW: Watoto Wasoko
- ADS score: score of the Additional Situations
- MCS score: score of the Most Critical Situations

1. Introduction

Despite growing awareness and efforts to increase global availability and improved access to water, sanitation and hygiene (WASH), there are still 663 million people worldwide lacking access to water and 2.4 billion to sanitation, respectively (WHO & UNICEF, 2015). The United Nation's Sustainable Development Goals which were passed in 2015 particularly comprise equitable access to water and an adequate access to sanitation and hygiene for all, as well as an end of open defecation (UN, 2015). This goal seems to be pretty ambitious considering that currently about one billion people are practicing open defecation, whereby 9 out of 10 of those people live in rural areas. Millions of deaths every year are due to this lack of access to a safe and reliable WASH infrastructure and inadequate hygiene and sanitation behavior (Prüss-Üstüm, Bonjour, Corvalán, 2008; Wolf et al., 2014). A comprehensive review collected data from 142 countries, conservatively calculating that WASH-related diarrhoea alone was responsible for about 842 000 deaths in 2012 (Prüss-Üstüm et al., 2014) and is among the major contributors to global child mortality (Liu et al., 2015).

Handwashing with soap (HWWS) in key situations, such as after stool and before contact with food, has shown to be one of the most cost-effective (Cairncross & Valdamis, 2006) interventions to improve public health. In conjunction with adequate sanitation, it serves as an important barrier to the faecal-oral transmission of diarrhoea since it hinders pathogens from reaching the immediate environment while also reducing the secondary pathway of transmission from the environment to a new host (Curtis et al., 2000). Cairncross and Colleagues (2010) suggested that HWWS reduces the risk of diarrhoea by up to 48% and a systematic review of 2014 reports a risk reduction of approximately 40% (Freeman et al., 2014). Further, HWWS also plays an essential role in reducing infections such as trachoma (Ejere, Alhassan & Rabiou, 2012), helminths (Freeman, Clasen, Brooker, Akoko & Rheingans, 2013) influenza, neonatal infections (Blencowe et al., 2011), HIV-associated infections (Filteau, 2009; Isaac, Alex & Knox, 2008) and pneumonia (Aiello, Coulborn, Perez & Larson, 2008; Greenland, Cairncross, Cumming & Curtis, 2013). If we additionally take into account that malnutrition amongst children is strongly related to diarrhoeal diseases and environmental enteropathies, the importance of HWWS cannot be overestimated (Chambers & Medezaza, 2014).

Since the global prevalence rate of HWWS is estimated to be around 19 % with country means in low and middle-income regions between five and 25% (Freeman et al., 2014), interventions in the WASH sector should pay particular attention to the Hygiene aspects and HWWS.

Most of the existing research focused on HWWS on a household level, excluding institutional prevalence rates such as in schools or hospitals and data on school coverage, in particular, is scarce. An orientation framework is given by the UNICEF guidelines for a minimum standard of WASH in schools, pronouncing that every school should have at least close and safe sanitation facilities, access to safe drinking water, handwashing facilities with soap or other cleansing agents and hygiene promotions for the students (2015).

However, UNICEF (2015) estimates that in 2013 just 54 % of the schools in Sub Sahara Africa had access to safe drinking water and 53% to sanitation respectively. Just 21% of the schools in low-income countries are providing handwashing facilities while some studies report a provision of soap in just 2-7% of the schools (Saboori, Mwaki & Rheingans, 2010; Njuguna et al., 2008) and latest research from Kenya indicates that just 2-3% of the students (Saboori et al., 2013; Pickering et al., 2013) were regularly washing their hands after defecation.

Despite this alarming figures there is also evidence that interventions which improve hand hygiene in schools, either in addition to other water and sanitation interventions or alone, have been associated with a reduction of diarrhoea, pupil illness, pupil absence in schools (Nandrub-Bus, 2009; Taalat et al., 2011; Freeman et al., 2013) and an improvement in educational outcomes (O'Reilly et al., 2008; Bowen et al., 2007; Freeman et al., 2012). Furthermore, research indicates a reduction of illness among siblings of students under 5 due to school-based WASH interventions (Blanton, Ombeki, Oluoch, Mwaki, Wannemuehler & Quick, 2010; Dreibelbis, Freeman, Greene, Saboori & Rheingans, 2014). The interventions may interrupt pathogen transmission within the school environment and therefore prevent schoolkids from taking them back into their domestic households (Cairncross, Blumenthal, Kolsky, Moraes & Tayeh, 96). Even more important, school kids are referred to as “agents of change”, diffusing improved behavior and practices learned at school into their homes and communities (Onyango-Ouma, Aagaard-Hansen & Jensen, 2005; O'Reilly et al., 2008; Blanton et al., 2010).

In the meantime, health practitioners fortunately agree that interventions are not sufficient and sustainable if they only provide “hardware”, such as latrines and boreholes, but miss the “software” aspect, which means to trigger a necessary and lasting behavior change. This is especially important when it comes to hygiene and HWWS in particular (Peal, Evans & Van der Voorden, 2010), as the degree of compliance strongly affects the success of interventions and the provided infrastructural improvements (Du Preez, McGuigan & Conroy, 2010;

Mäusezahl et al., 2009). There are several approaches aiming at a behavior change in particular target groups, most of them mainly relying on health education and structured, regular participation in training (Mosler, 2012). On a community level, the probably best known amongst them is the installation of Community Health Clubs (CHC; Waterkeyn & Cairncross, 2005) which are supposed to ignite a peer pressure based focused group dynamic due to information and education, changing norms and beliefs, the Community-Led Total Sanitation Program (CLTS; Kar and Chambers, 2008) and the Participatory Hygiene and Sanitation Transformation (PHAST; Wood, Sawyer & Simpson-Hebert, 1998).

For the use on a school level, these approaches can be adjusted, for example the PHAST Programme became the Child Hygiene and Sanitation Transformation Programme (CHAST), which uses a variety of educational games and exercises to teach children about the link between health and personal hygiene (De Vreede, 2005; Bockhorn-Vonderbank, 2004). Peal, Evans and Van der Voorden (2010) state, an effective WASH in school programmes should, in addition to the adequate “hardware”, contain Training of Trainers; involvement of parents and teachers when it comes to decisions about technology, designs and payments; a comprehensive training of teachers and head teachers, providing lesson plans and materials to frequently use in classroom teaching and an implementation of active School Health Clubs (SHC) and/ or explicitly School WASH Clubs (SWC).

1.1 Psychological Background

Even though research suggests that these approaches have at least led to short-term success in changing behavior (Peal et al., 2010), they basically do not provide information about underlying psychological behavioral factors and therefore make it impossible to conclude why and how these approaches work. An approach which provides a conceptual behavioral model based on psychological evidence and these factors would instead enhance behavior change by systematically applying well-tailored behavior change techniques (BCT) matched with the corresponding factors (Mosler, 2012).

So far, the Risk, Attitudes, Norms, Abilities and Self-regulation (RANAS) model of behavior change, proposed and conceptualized by Mosler, seems to be the most comprehensive and elaborate approach, combining earlier research and models of human behavior such as the Health Belief Model (Rosenstock, 74), the Protection Motivation Theory (Floyd, Prentice-Dunn & Rogers, 2000), the Health Action Process Approach (Schwarzer, 2008) and the Reasoned Action Approach (Fishbein and Ajzen, 2010). Drawing on this previous concepts, the RANAS

model postulates five blocks of factors which have shown to be strongly involved in any process of behavior change, namely risk, attitudinal, normative, ability, and self-regulating factors.

Following the argumentation of the RANAS, most of the common and briefly described interventions in the WASH sector reveal significant weaknesses since they're mainly relying on health education and training. While providing information for the particular target groups about risk and severity of certain behaviors (factual knowledge), about preventative behaviors respectively (actual knowledge) and by strongly aiming to change attitudes and norms within certain communities or institutions, the interventions basically neglect self-regulating factors such as action control, planning and coping.

As Heckhausen and Gollwitzer state in their Rubicon Model of Action Phases (1987), there is a distinction between a motivational and a volitional phase of action. While risk perception along with other factors contributes to create an intention in the motivational phase of action, the volitional phase with the contributing self-regulating factors generates the behavior (Mosler, 2012).

Prior research, not just on safe water consumption (Huber, Bhend & Mosler, 2012; Tobias & Berg, 2011) but also on other health behaviors, in fact indicates that risk perception alone is a poor predictor of health-related behavior change (Claasen, Henneman, Kindt, Marteau & Timmermans, 2010; Radke, Scholz, Keller, Knäuper & Hornung, 2011; Schwarzer & Luszczynska, 2008). Sheeran (2002) confirms these findings in his review, pointing out that out of all the people across different studies with positive intentions towards a certain health behavior, just about 50% successfully showed the actual behavior.

Health interventions, including interventions in the WASH sector, should therefore aim to target the motivational and the volitional phase of action (Hagger, 2009) and research indicates that these combined, synergistic approaches are effective when it comes to the initiation of a particular behavior (Andersson & Moss, 2011; Chatzisarantis, Hagger & Wang, 2010; Hagger & Luszczynska, 2014).

1.2 Implementation intentions

One well-known and widely used strategy to bridge the gap between intentions and actual behavior are implementation intentions. Building upon the Rubicon Model of Heckhausen and Gollwitzer (1987), implementation intentions serve as specific plans which indicate how, where and when to perform a certain goal-directed behavior (Gollwitzer & Brandstätter, 1997).

Through the formation of “if-then” plans (e.g., “If situation X is encountered, then I will perform response Y”), implementation intentions establish a link between a particular, unconditional situation and a behavioral response directed to achieve a certain goal (Gollwitzer & Sheeran, 2006). Instead of focusing on the particular outcome and the goal itself, they are rather referring to a situational cue and the linked goal-oriented response (Gollwitzer, 1999). By delegating control of behavior from oneself to the environmental cues specified in the “if”-components of the plan, the performance of the behavior gets activated automatically when the specific situation is met (Gollwitzer, 1993). As Bargh (1992) states, automatic processes can be summarized by three key features, namely immediacy, efficiency and lack of awareness. Plenty of studies have shown that implementation intention effects possess these characteristics, aiding people to execute a certain behavior swiftly and effortlessly, despite other factors such as cognitive load, capacity of self-control and conscious intent (Webb & Sheeran 2004; Orbell & Sheeran, 2000; Gollwitzer & Brandstätter, 1997; Brandstätter, Lengfelder & Gollwitzer, 2001; Lengfelder & Gollwitzer, 2001; Webb & Sheeran, 2003; Sheeran, Webb & Gollwitzer, 2005). By indicating good opportunities to act and through the strategic automatization of goal-directed responses (Gollwitzer & Sheeran, 2006), implementation intentions have shown to effectively change a wide range of health-related behaviors such as cancer screening routine (Rutter, Steadman, & Quine, 2006; Browne & Chan, 2012), alcohol consumption (Armitage, 2009) healthy eating (Adriaanse, de Ridder & de Wit, 2009; Armitage 2007) and physical activity (Luszczynska, 2006). A meta-analysis, containing over 8,000 persons in 94 independent studies yielded a medium-to-large effect size ($d = 0.65$; Cohen, 1992) of implementation intentions on the achievement of goals in multiple behavioral domains (Gollwitzer & Sheeran, 2006). More recent systematic reviews of the impact of implementation intentions in health-related behavior change, particularly physical activity (Bélanger-Gravel, Godin & Amireault, 2013; Carraro & Gaudreau, 2013) and diet (Adriaanse, Vinkers, De Ridder, Hox & De Wit, 2011), confirm the efficacy. Hagger & Luszczynska (2014) recently provided a very comprehensive overview of the diverse scope of application of implementation intentions.

Beside the various factors moderating the effects of implementation intentions on goal achievement such as self-efficacy (Wieber et al., 2010), self-regulatory factors (Lengfelder & Gollwitzer, 2001; Prestwich, Lawton & Conner, 2003 ; Brandstätter et al., 2001) or executive functioning (Gawrilow, Gollwitzer & Oettingen, 2011; Hall, Zehr, Ng & Zanna, 2012) , a strong commitment to the goal itself is crucial (Locke & Latham, 1990; Ajzen, 1991; Webb & Sheeran,

2006). Strong goal commitment is characterized by high expectations of success and a high incentive value. In other words, goal commitment is promoted when a goal is feasible and desirable (Bandura, 1997; Gollwitzer, 1990; Atkinson, 1974).

1.3 Implementation intentions and WASH

As stated before, WASH-related behavior change traditionally focuses more on the motivational phase of action and therefore studies and research on interventions using self-regulating strategies, such as implementation intentions, is rare. However, drawing on the RANAS model, Inauen and Mosler (2014) found three factors to have the highest impact potential to ignite a behavior change, promoting a switch from arsenic-contaminated to arsenic-safe wells in rural Bangladesh: commitment, the descriptive norm, and recovery self-efficacy. To address the underlying psychological factors of the identified determinants, the RANAS model proposes a set of so-called Behavior Change Techniques (BCTs) to modify them accordingly. Implementation intentions were selected to increase the commitment and have shown to be effective when combined with risk information and reminders, supporting a well-switching.

The results of their study provide evidence that implementation intentions indeed are a useful tool for behavior change, leading to safe water consumption and therefore might be a good choice when it comes to a change of other WASH related behaviors in rural areas as well, such as HWWS or the use of latrines. Ongoing interventions might benefit a lot from taking self-regulating factors into account, adding a planning-part to their original intervention procedure and provide an according BCT.

1.4 The present research

To shed light on the question if implementation intentions are an effective strategy for WASH-related behavior change and if the forming of implementation intentions can increase the impact of ongoing WASH sensitizing programs, the present research dwells on an intuitively developed new approach of sensitizing in the WASH sector at primary schools in the Karamoja region in rural Uganda called Football4WASH (F4W).

Karamoja is the least developed sub-region in Uganda (RAU, 2015) with 82 % of the local population living in extreme poverty compared to a national average of 32%. Coverage of improved sanitation in rural Uganda is with 17% far below the global coverage for rural areas

of 51%. About 8 % of the people living in rural areas in Uganda still practice open defecation (WHO & UNICEF, 2015). In regards to an unpublished survey from the Welthungerhilfe (WHH), the number increases up to 38% of the households for Karamoja in particular, meaning that more than one-third of the people in Karamoja are using no form of a toilet at all (Appendix 3). When it comes to HWWS, the figures are similarly alarming: estimations reveal a prevalence rate of only 7% in rural Uganda (WHO & UNICEF, 2015).

The F4W, geared at using the vibrant potential of football as a sport, was developed to face these numerous challenges of the current WASH situation in the Karamoja region and in order to improve the general health of the primary school students, preventing them from waterborne diseases and diarrhoea in particular. The several drills therefore promote the performance of a number of certain outcomes, such as boiling water before drinking, using of latrines or regularly washing the face, whereby the presented research focuses on HWWS in critical situations as the key goal-related behavior.

According to the research and theories described in the previous chapter, the author proposes that the F4W program is more effective in triggering the goal related behavior when it contains an additional component of action planning and provides a theory-based BCT, namely implementation intentions.

To test this assumption, the study compares the effects of the F4W Training as a standard intervention (F4WO) with the effects of a F4W Training + implementation intentions intervention (F4W+II) on HWWS on primary school students in Karamoja. A change of the behavior of HWWS was measured with a self-report questionnaire conducted before and 10 days after the respective intervention.

The author hypothesized that children in the F4W+II condition would report a larger increase of HWWS per day in the follow-up than those in the F4WO and control condition. In addition, it was also hypothesized that students in the F4W+II condition would improve more on identifying the most critical situations of HWWS than those in the F4WO and the control condition. To the knowledge of the author this is the first study investigating the effects of implementation intentions as a strategy to increase HWWS in primary school students, certainly in Uganda. As stated before, HWWS is supposed to be one of the most cost-effective approaches to improve global public health and to reduce child mortality (Cairncross & Valdamis, 2006). It is rather surprising that despite existing evidence of the various striking effects of implementation intentions on numerous kinds of health related behaviors, HWWS

has not attracted the attention of research on implementation intentions yet. The study therefore enlarges existing research on implementation intentions for a whole new and important range of application. While there is research on the use of implementation intentions with school children for example in the context of ADHD Regulation (Gawrilow & Gollwitzer, 2008) and physical mobilization (Armitage & Sprigg, 2010), none of these studies were conducted in the countries of the global south. Thus, another aim of the study is not just to investigate if implementation intentions can work to promote HWWS amongst students, but also to offer valuable cues to the question if implementation intentions are applicable for student interventions in field studies in the rural areas of these countries in general.

For the F4W, this research is the first approach to monitor the effects of the campaign and to see if it can be enhanced by adding implementation intentions as a BCT, aiming at underlying self-regulation factors of health-behavior. This would confirm prior results, indicating that theory-based and evidence-based interventions are having greater impact on people's health-behavior and that WASH interventions should pay particular attention to the volitional phase of action, providing concrete strategies of action planning and not just focusing on information.

Hopefully these findings finally lead to a wiser way of conceptualizing interventions, preventing us from spending and wasting valuable resources and promoting a lasting WASH-related behavior change, indispensable for any form of sustainable development.

2. Methods

In October 2016, a team of members of Viva con Agua Uganda (VcAU), Watoto Wasoka (WW) and the Welthungerhilfe (WHH) conducted a four days F4W coach-the-coaches training for 14 primary schools in the Karamoja region. Each school was invited to bring at least one teacher and four student members of their schools WASH clubs (SWC), leading to 85 participants in total. Within these four days, the students and the teachers had time to get familiar with the whole concept of the F4W program and to practice and exercise the various drills exhaustively. They were empowered and instructed to be able to guide through the F4W program on their own, leading to a strengthening of the existing WASH clubs, making them more self-reliant and independent from external advise and providing joyful tools for their peer to peer sensitizing. The presented research was conducted when ten out of these 14 schools were visited from the same team plus the author of the study for a five month follow up (T1), seeing how

the former trained students would carry out the drills and apply the learned skills at their respective schools.

The data retrieved at the first visits at the schools (T1) was used as baseline. To make sure to have enough time for a second visit and a ten days follow up (T2), it was initially decided to collect data from only the first four schools which were visited. After realizing that there is the possibility to revisit a fifth school also, the chance was taken, thus including data from five schools. The schedule of the program and consequently the election of the schools was set due to geographical reasons, visiting one district after another and avoiding unnecessary tiresome long-distance off road drives.

2.1 Participants

In total, 85 students (50 female) from the five selected schools attended the study, answering the questionnaire.

To recruit them, the responsible head-teachers were requested to ask the students taking part in the F4W training if they would like to participate in the study as well, helping to improve the training.

It was made clear that participation is voluntary and that the students will not receive any rewards. They were also told that we would come back after ten days and that participation is only useful if they can commit themselves to take part in the follow-up as well. Still they were informed that they can withdraw themselves at any time.

The conditions for the first two schools were randomly assigned by flipping a coin to the only F4W condition or the F4W+ II condition, leading to 42 students (26 female) in the F4W+II condition and to 31 students (15 female) in the F4WO condition, respectively.

For the fifth school, we explicitly asked the teacher to recruit students who would not join the F4W Training providing a control group of 12 students (9 female), analysing if our mere presence at the school would influence their handwashing-behavior.

2.2 Procedure and materials

The participants were led to a quiet class room where a brief introduction by the team members was given. The course of the upcoming study and the F4W Program was explained to the students, telling them they would receive a small questionnaire which they have to complete before the actual F4W intervention. They were told that their participation is highly appreciated and that if they would answer the questions truthfully they would help to improve the whole F4W training, making it more accurate and effective. Then, the students were asked to spread

throughout the room, seating only one person per desk to make sure they could not copy from their neighbours' questionnaire.

2.2.1 Questionnaire

A structured questionnaire was developed and translated from English into Karamojong. A Karamojong native, living in Germany, was contacted and translated the questionnaire and a native speaker employee of the WHH checked and verified the first translation after arrival in Uganda.

Karamojong is a Nilo-Saharan language and there are approximately 370.000 native speakers of Karamojong, living in the Karamoja area. Despite the fact that English is the official language and the language commonly used at schools, it's poorly spoken by most of the primary students in Karamoja, especially the younger ones. Hence, it was planned to use Karamojong in the questionnaire. However, after remarks from field workers of the WHH that some of the students in the schools are boarding-students who come from areas outside Karamoja and don't understand any Karamojong, it was decided to work with a bilingual version of the questionnaire, using English and Karamojong.

To make sure that no students would be discouraged and inhibited to participate due to a general lack of adequate reading and writing capability, the complete final version of the questionnaire was read out loud in Karamojong, tape recorded and played at the schools.

This also allowed the author to ensure that all participants would receive exactly the same standard introduction for the different exercises and prevent a potential translator or overambitious teacher from giving away the right or presumably desirable answers.

Consequently, all exercises were applicable for students who don't know to read or write, using 5-point Likert scales, pictograms and specified numeric response options.

Besides personal details, the questionnaire contained questions regarding the behavior of HWWS, the individual goal commitment and in the F4W+II condition an additional implementation intention section.

2.2.2 HWWS

Handwashing behavior was recorded with two questions. The first one was asking the students *"How many times a day do you wash your hands with soap? If you are not sure, please try to*

estimate the number as exact as possible". The particular number had to be marked on a number line from 1 to 15+ (once a day to 15 or more times every day).

According to Freeman (2014), the mere number of HWWS might provide only a rough indication and tendency regarding the handwashing behavior and the important question is not just a matter of quantity but rather of the particular occasions in which the behavior is shown. Therefore, the second question was developed to see if students could identify the most critical situations of HWWS. Twenty small pictograms were created (see Appendix 1), presenting 20 everyday situations ranging from indispensable situations as *toilet use* to irrelevant situations as *watching TV* or *reading a book*. Participants were asked "*In which of the 20 situations you find in the drawings is it extremely important to wash your hands with soap? Please mark the five most important situations!*" A standard processing time of three minutes was given to all students.

The German Bundeszentrale für gesundheitliche Aufklärung (2016) points out the importance of HWWS after nose blowing/sneezing, coughing, contact with animals and ill people and before food preparation, highlighting HWWS after toilet-use and before eating. In accordance to their recommendations the F4W also pays particular attention to the latter two situations.

Consequently, it was decided to focus on HWWS after toilet and before eating as the most relevant goal-related behavior. Thus, participants could either identify both crucial situations (score = 2), just one (score = 1) or none of them (score = 0), composing the score of the most critical situations (MCS score). The other marks were used to check if the participants would have a general understanding of when to wash their hands, ticking other appropriate situations (e.g. sneezing or contact with animals) or if they would just randomly make their marks. Participants could get 0.5 points for every appropriate situation marked, hence a maximum score of 1.5 for the additional situations (ADS score).

To ensure that the results would not be biased due to position effects and the arrangement of the pictograms, seven different versions and arrangements were provided.

2.2.3 Goal commitment

Goal commitment was queried over all conditions by assessing the students' expectations and their incentive value to successfully perform the goal-related behavior. Drawing on an

approach, used by Gollwitzer and his colleagues (2011), expectations were measured with the question “*How sure are you that you’re going to wash your hands with soap in the future frequently?*” whereas desirability was assessed, asking ““*How important is it for you personally to wash your hands with soap regularly in order to stay healthy?*” The facial expressions on the 5-Point Likert scale ranged from smiling and happy (very important/sure), somewhat happy, neutral, somewhat sad to tearful and sad (not important/sure at all) and were recorded from 1 to 5.

In the F4WO and the control condition children finished the questionnaire with the two questions. In the F4W+II condition, measurement of goal commitment was integrated in the implementation intention section.

2.2.4 Implementation intentions

After finishing to mark the particular pictograms, children in the F4W +II condition were again informed that the whole training is about learning how to reach the goal of staying healthy and that the best way to stay healthy is not to get in contact with any pathogenic germs and harmful bacteria. It was further explained that therefore it’s really crucial to wash hands with soap frequently and that they would learn two simple plans which will help them remembering to wash their hands in particular situations.

Before proceeding with the implementation intentions, goal commitment was assessed as described above.

The first implementation intention “*If I went to the toilet then I will wash my hands with soap!*” was presented in Karamojong and in English and students were asked to listen carefully, trying to remember the plan.

After playing the plan for a second time, the students repeated the plan all together, saying it out aloud three times. To avoid any misunderstandings resulting from language difficulties, the plans were first repeated in Karamojong then again repeated in English. Right after that the students were led through a guided visualization, invited to come up with a mental image of a toilet which they frequently use. They were asked “*How does this toilet look like? Which colour have the walls? Is there a door? Which colour has the door?*” Particular attention was given to the following, goal-related procedure, “*You get up, put your clothes back on and you go to the next water tap. Imagine how you open the tap, how the water flows over your hands. How you rub your hands with soap and how you clean them again. You turn of the water tap and you look at your clean hands.*”

The first implementation intention was repeated again loudly, after that the same procedure was applied for the second plan “*If I’m going to eat something, then I will wash my hands with soap first*”.

Due to a limit of time and human resources, this time-saving approach was promising thus enabling to implement the plans with any number of students simultaneously. Since existing research points out that there is no difference between self-generated and experimenter-provided implementation intentions (Armitage, 2009), using the benefits of the ease of the described approach is readily justifiable. Moreover because the active process of mental imagery which has shown to enhance effects of implementation intentions (Knäuper, Mc Collam, Rosen-Brown, Lacaille, Kelso & Roseman, 2011) by adding personal “rich multi-sensory information to the mental representation activated by the verbal implementation intention” (Knäuper, Roseman, Johnson & Krantz, 2009, S.183) supplemented the mere repeating of the prescribed plans.

For the Follow-Up (T2), possible improvements in the quantity of HWWS compared to the baseline at T1 were measured, adjusting the first question, asking “*how many times a day did you wash your hand with soap after our last meeting?*” The presented pictograms and the according instruction were the same as at T1, recording again, if students can identify the most critical situations which indicate a need for HWWS.

Any changes in the students’ expectations and their incentive values over the ten days were assessed by using the same two questions and the same 5-point Likert scale.

To check if students in the F4W+II condition would still have the implementation intentions in mind, they were additionally asked if they could remember the two plans which were conducted at T1 and to write them down either in English or in Karamojong.

This abandonment of the initial plan to design a questionnaire without any written tasks was made after T1 when it became apparent that the average age of the participating students was higher than expected and therefore would allow to presuppose sufficient writing skills. Following the discussion with the responsible head teachers who assured that the students would be capable of solving written assignments, the author decided to include this common approach of checking implementation intentions.

2.3 Football4WASH

Pursuing the idea of a follow up which came up after the training in October, the F4W Training after T1 was led by the SWC members who received the extensive coaching in October, in

order to see if they would be able to master the procedure of the learned drills and instruct their fellows accordingly. Team members from VcA Uganda and Watoto Wasoka were present all the time, making sure that the drills were conducted correctly and supporting when help was needed.

Taking part in the training was voluntary and students had to register informally with the responsible head teacher. The number of participants was limited up to 50 students per school, including the remaining members of the SWC, to avoid overburdening the student coaches and to be able to emphasize the correct execution of the drills. The age of the participating students ranged from 9-18.

Training was scheduled up to three hours, giving sufficient time to practice the drills properly. Appendix 2 shows a comprehensive overview of the single drills. After finishing the last drill the whole group gathered together, receiving feedback from the VcA Uganda and Watoto Wasoko coaches regarding the conduction of the drills. Aiming at constantly improving the F4W, the feedback round was also intended to gain insights from the students about likes and dislikes of the training and what challenges they were facing during the training.

2.5 Data Analysis

All calculations were computed with IBM SPSS Statistics 24.0. Cases with missing values at T1 were excluded. To test for potential biases due to attrition, dropouts were compared in order to study participants on baseline measures with independent samples *t*-tests. A *3 between x 2 within* Mixed ANOVA was conducted to test the effects of the F4W and the F4W+II intervention on the handwashing-behavior.

3. Results

3.1 Descriptive analyses

The following results were analysed with 72 participants (41 female) which represent 89% of the total sample. Their average age was 13.32 years, ranging from ten to 18 years. 12 participants (nine female) were absent for the second session and one participant in the control group was excluded due to missing values in the first session. Of the 12 participants, three were in the F4WO group, seven were in the F4W+II group and two in the control group leading to a final sample of 28 participants in the F4WO group, 35 in the F4W+II group and nine in the control group (Fig.1).

An independent samples *t*-test was run to determine if there were differences between the participants dropping out and the ones showing up at the follow-up. There was homogeneity of

variances, as assessed by Levene's test, all $ps > .075$. To reduce the impact of potential bias due to a violation of normality, bootstrapping was performed, providing bias corrected and accelerated (BCa) confidence intervals. Although children who reappeared and participated in the follow up were slightly younger ($M = 13.32$, $SD = 2.63$) than the ones who did not ($M = 14.25$, $SD = 1.68$) this difference, $M = .93$, BCa 95% CI [-.726, 2.506], was not significant, $t(82) = 1.627$, $p = .108$, $d = -.51$. Students who dropped out did not show any significant differences compared to their continuing fellows in regard to their number of HWWS, $M = .417$, BCa 95% CI [-2.449, 3.156], $t(82) = .261$, $p = .795$, $d = -.08$ and their MSC score, $M = -.0139$, BCa 95% CI [-.323, .302], $t(82) = -.079$, $p = .937$, $d = .03$.

A Pearson's product-moment correlation was ran to assess the relationship between age, the number of handwashing, the MSC score and of the ADS score at baseline, including the later dropouts and analysing the initial sample of 84 participants (Table 1). Given the lack of normality in some of the variables, bias corrected and accelerated bootstraps 95% CI's were calculated and are reported in square brackets. The Number of HWWS was significantly negative related with age, $r = -.248$ [-.441, -.058], $p = .023$, and the ADS score, $r = -.317$ [-.464, -.145], $p = .003$. Age was also correlated to the ADS score, $r = .258$ [.040, .425], $p = .018$. There was no significant relationship between the MSC score and the number of HWWS, $r = -.062$ [-.268, .174], $p = .577$, neither did the score correlate with age, the ADS score and the incentive value, all $ps > .139$.

Table 1 Correlations ($N=84$) at T1, including the later Drop-outs

	Age	No. of HWWS	ADS score	MCS score
Age	1	-.248*	.258*	.143
		.023	.018	.194
Number_of_HWWS		1	-.317**	-.062
			.003	.577
ADS score			1	.163
				.139

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

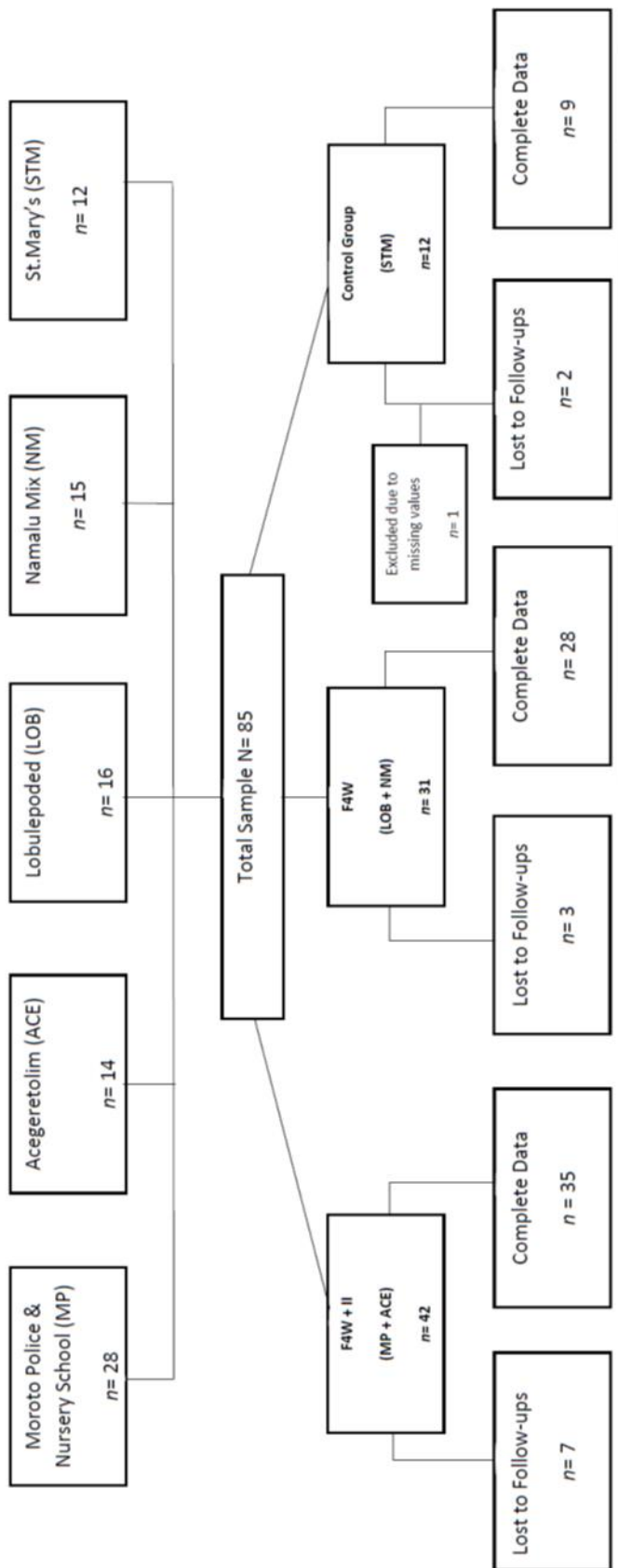


Figure 1. Flow diagram of students' progress through the phases of the experiment. Note that the first two schools were randomized to condition

3. 1.1. HWWS after using a toilet and before eating

HWWS before eating

At T1, 48 out of the 72 students or 66.7% did identify HWWS before eating as one of the most crucial behaviors in order to stay healthy. This number did increase for about 10% at T2, resulting in 76.4 % or 55 out of the 72 participants. However, all of the seven students who did change from T1 to T2 were in the F4W+II group, displaying a 20% increase from 71.4% to 91.4%, illustrating that after the intervention 32 out of the 35 participants in the F4W+II group did mark the pictogram with the eating situation (Table 2).

Table 2 HWWS before Eating before and after the intervention ($N = 72$)

Group		Eating			
		no		yes	
No intervention, $n(9)$	pre	6	66,7%	3	33,3%
	post	6	66,7%	3	33,3%
F4WO, $n(28)$	pre	8	28,6%	20	71,4%
	post	8	28,6%	20	71,4%
F4W+II, $n(35)$	pre	10	28,6%	25	71,4%
	post	3	8,6%	32	91,4%
Total, $N(72)$	pre	24	33,3%	48	66,7%
	post	17	23,6%	55	76,4%

HWWS after toilet

At T2, 69 out of 72 students or 95.8% did identify HWWS after toilet as goal relevant which displays an increase of about three percent from T1. One of the two students in the control group who did not mark the pictogram at T1 did so at T2 and one of the three students in The F4W group did change. In the F4W+II group, all 35 participants did mark it already at T1 (Table3).

Table 3 HWWS after the Toilet before and after the intervention ($N = 72$)

Group		Toilet			
		no		yes	
No intervention, $n(9)$	pre	2	22,2%	7	77,8%
	post	1	11,1%	8	88,9%
F4WO, $n(28)$	pre	3	10,7%	25	89,3%
	post	2	7,1%	26	92,9%
F4W+II, $n(35)$	pre			35	100,0%
	post			35	100,0%
Total, $N(72)$	pre	5	6,9%	67	93,1%
	post	3	4,2%	69	95,8%

3.1.2 Goal commitment

All participants stated that it is very important for them personally to wash their hands with soap regularly, indicating a very high incentive value of HWWS for all the students. 62 of the students were very sure they would wash their hands with soap frequently in the future, six were sure, two were somewhat sure and two were not sure at all. However, there was no significant difference in the mean number of HWWS and the mean MCS score between the students who were at least sure or very sure and those who were just somewhat or not sure at all.

3.2 Randomization Check

A one-way multivariate analysis of variance (MANOVA) with *condition* (control group vs. F4WO vs. F4W+II) as the independent variable and age, number of HWWS, the ADS score and the MSC score at T1 as the dependent variables was run to check the randomization procedure and to determine if there were any significant differences between the intervention groups. Using Pillai's Trace V , the differences on the combined dependent variables were statistically significant, $F(8, 134) = 8.812, p < .001; V = .689; \text{partial } \eta^2 = .345$. Follow-up separate univariate ANOVAs on the outcome variables showed that age, $F(2, 69) = 8.969, p = .000, \text{partial } \eta^2 = .206$, the number of HWWS, $F(2, 69) = 26.018, p = .000, \text{partial } \eta^2 = .430$, the ADS score, $F(2, 69) = 5.351, p = .007, \text{partial } \eta^2 = .134$, and the MSC score, $F(2, 69) = 4.346, p = .017, \text{partial } \eta^2 = .112$, were statistically significantly different between the students in the intervention groups. Games Howell post-hoc tests showed that students assigned to the control group were significantly younger ($M = 11.33, SD = 1.00; M = 13.71, SD = 1.38$ and $M = 13.51, SD = 1.70$, respectively) than students from the F4WO group, $p = .000$, and the F4W+II group,

$p = .001$. In regards to HWWS, students in the F4W+II group reported to wash their hands less during the day than students in the control and the F4WO group ($M = 7.94$, $SD = 3.725$; $M = 16$, $SD = .00$ and $M = 14.07$, $SD = 4.713$, respectively), which was significantly different, using the Games Howell post-hoc test, both $ps = .000$. Differences in the MSC and the ADS score were not significant. Table 4 displays an overview of the three different intervention groups, their characteristics and their results at T1.

Table 4 Overview of Ms and SDs for age and the variables at T1 ($N = 72$)

Group		Age	No. of HWWS	ADS score	MCS score
No intervention, $n(9)$	Mean	11,33	16,00	,667	1,1111
	Std. Deviation	1,000	,000	,6124	,78174
F4W, $n(28)$	Mean	13,71	14,07	,893	1,6071
	Std. Deviation	1,384	4,713	,4973	,56695
F4W+II, $n(35)$	Mean	13,51	7,94	1,171	1,7143
	Std. Deviation	1,704	3,725	,4012	,45835
Total, $N(72)$	Mean	13,32	11,33	1,000	1,5972
	Std. Deviation	1,677	5,146	,4965	,57310

3.3 Main Analysis

To test the effects of the F4WO and the F4W+II intervention on the handwashing-behavior a series of two way mixed ANOVAs was conducted. Using a *3 between x 2 within* design, *group* (control vs. F4WO vs. F4W +II) was the between-participants factor, *time* (Time 1 vs Time 2) the within-participants factor, the number of HWWS and the MCS score were the dependent variables.

The data was not normally distributed, as assessed by Shapiro-Wilk's test of normality, $ps < .05$, and the homogeneity of variances was not given for all variables, as indicated by Levene's test, $p < .05$. Box's M test was not significant, indicating a homogeneity of covariances, $p > .001$. Due to the fact that transformation of the data was not successful, the mixed ANOVA was conducted as planned initially but non-parametric tests were run afterwards for additional information. There was no significant interaction between the intervention groups and time on the MCS score, $F(2, 69) = 1.082$, $p = .345$, partial $\eta^2 = .030$, and no significant main effect of *time* was found, indicating that the identifying of the most critical situations did not change over time. However, there was a main effect of *group*, $F(2, 69) = 7.899$, $p = .001$, partial $\eta^2 = .186$, showing that there was a significant difference in the unweighted marginal mean of the MCS

scores between students in the control group ($M = 1.167$, $SE = .147$), the F4WO group ($M = 1.625$, $SE = .083$) and the F4W+II group ($M = 1.814$, $SE = .074$). The control group was associated with a MCS score .458 points lower than the F4WO group and .648 points lower than the F4W+II group, $ps < .05$, while the difference between the F4WO group and the F4W+II group was not significant. Further t -tests revealed a significant improvement within the F4W+II group for the MSC score, $M = .200$, 95% CI [-.362, -.038], $t(34) = 2.503$, $p = .017$, $d = .423$, but not within the other groups. A non-parametric Mann-Whitney U test confirmed the significant changes within the F4W+II group, $U = 490.00$, $z = -2.136$, $p = .033$.

As for the MCS score the mixed ANOVA did not show any interaction between the intervention groups and time on the number of HWWS, $F(2,69) = 0.748$, $p = .477$, partial $\eta^2 = .021$ and no significant main effect of *time*, pointing out that the number of HWWS did not change over time. The main effect of *group* however, revealed a statistically significant difference in the number of HWWS between the intervention groups, $F(2,69) = 32.807$, $p < .001$, partial $\eta^2 = .487$. The unweighted marginal means of the number of HWWS for the control, the F4WO and the F4W+II group were 16.00 ($SE = 1.085$), 14.5 ($SE = .615$) and 8.714 ($SE = .550$) respectively. Children in the control group did report to wash their hands more often every day, $M = 7.28$, $p < .001$, than the students in the F4W+II group and so did the students in the FW4O group which was also a significant difference, $M = 5.79$, $p < .001$, compared to the F4W+II group.

A change score for the MCS score and HWWS within the particular groups was computed, subtracting the participant's results from T1 from T2. Using a series of independent t -tests and non-parametric Mann-Whitney U tests, the change scores between the groups were compared, showing no significant results, besides for the change score of HWWS between the control and the F4W+II group, $M = 1.542$, 95% CI [.574, 2.512], $t(42) = 3.235$, $p = .003$, $d = .774$ and $U = 99.00$, $z = 144.00$, $p = .035$ for the Mann-Whitney U test, respectively. Figure 2 and Figure 3 provide an overview of the changes from T1 to T2 within the different intervention groups.

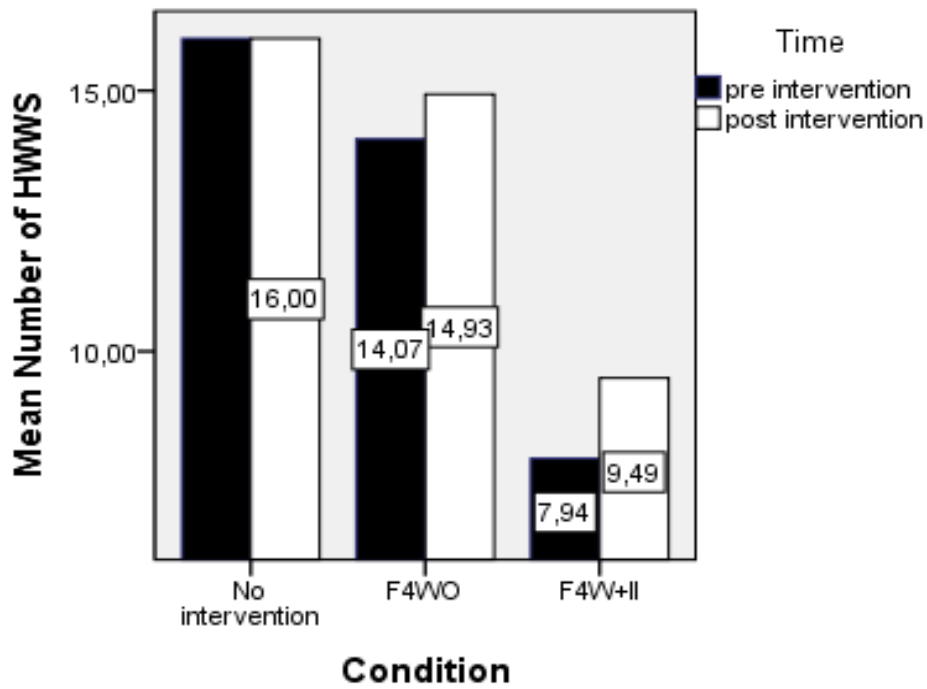


Figure 2 Effects of the different interventions on the number of HWWS per day

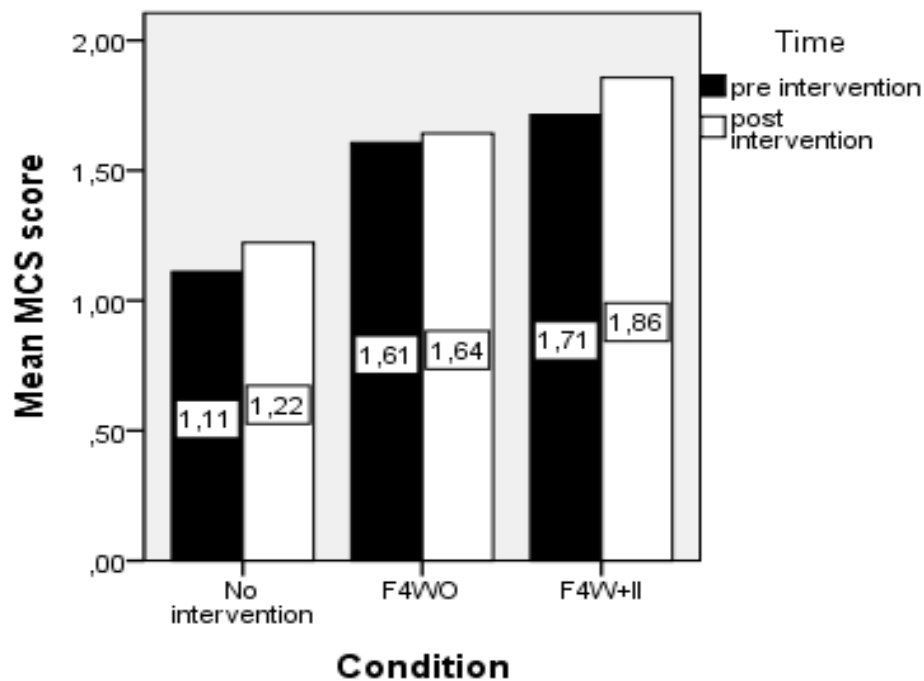


Figure 3 Effects of the different interventions on the Identifying of the most critical situations

Implementation intention check

None of the 32 students in the F4W+II group was able to rewrite the second plan (“*If I’m going to eat something then I will wash my hands with soap first!*”). Seven were able to recall the first plan and write it down accordingly (“*If I went to the toilet then I will wash my hands with soap!*”).

4. Discussion

The main goal of the present research was to explore and analyse if implementation intentions as a strategy of action planning are a useful tool to trigger a change in the handwashing-behavior amongst primary students in rural Uganda. An ongoing sensitizing intervention called Football 4 WASH was therefore complemented by the forming of implementation intentions leading to two different intervention groups. Differences in the behaviour changes were measured using the self-reported number of HWWS and a test about the knowledge of the most critical situations as indicators of handwashing-behavior. There were three key findings.

First, basis data retrieved at T1 revealed a surprisingly good handwashing-behavior amongst all students. More than two thirds of the students did identify HWWS before eating as crucial and more than 90 % did so for HWWS after using the toilet. Having the earlier mentioned estimations of the prevalence of HWWS in rural areas in mind, students reported to wash their hands with soap more often than expected, even though there were significant differences between the groups. Accordingly, they do recognize the importance of HWWS on their health status and showed a strong goal commitment to regularly wash their hands in order to stay healthy.

Second, the hypothesis that students in the F4W +II would improve their performance of identifying the most critical situations of HWWS more than students in the F4WO and the control group could not be confirmed. All groups improved slightly from T1 to T2. Even though the students in the F4W+II did improve the most, these differences were not significant and their higher performance score was rather due to sample characteristics than the intervention. However, only the F4W+II group showed a significant improvement from T1 to T2 within the group with a medium effect size, indicating that they might have still benefitted from the intervention and the forming of the implementation intentions. Third, the hypothesis that students in The F4W + II group would report a larger increase of the number of HWWS than students in the F4WO and the control group could not be confirmed neither. Students in the two

intervention groups did report to wash their hands more often at the follow-up but the changes were not significant or impossible to interpret due to an appearing ceiling-effect in the control group and it can't be concluded that changes were in behalf of the interventions.

4.1 Limitations of the present study

It is important to note a number of possible limitations that help to put the findings in the right perspective. First of all, since there is no universal instrument or a generally applicable measure of handwashing-behavior, the operationalisation of handwashing-behavior through the combination of the sheer number of HWWS and the knowledge about the most critical situations was a novel measure and cannot rely on previous research. Due to a lack of timewise resources, these dependent variables were not established in piloting and it is at least worthy of discussion in how far they are a good indicator of the actual behavior. In fact, Biran and colleagues (2008) doubt that a single universally applicable indicator for handwashing-behavior is feasible and measures which are used should be interpreted within the contextual setting. Since people tend to, consciously or not, give answers from which they think will please the researcher and will illustrate a good image of themselves (Cousens, Kanki, Toure, Diallo & Curtis, 1996), self-reports are known to overestimate the rates of HWWS (Biran, Rabie, Schmidt, Juvekar, Hirve & Curtis, 2008; Curtis, Cousens, Mertens, Traore, Kanki & Diallo, 1993). On account of this so called Courtesy bias, structured observations are supposed to convey a more realistic depiction of the actual behavior but have their own deficiencies. The bare presence of an observer has been shown to alter students' usual behavior, resulting in an increased handwashing-behavior while under observation (Ram et al., 2010; Pickering, Blum, Breiman, Ram & Davis, 2014). Video surveillance instead, by minimizing the reactivity, has been shown to reduce handwashing rates by approximately 10% when compared to personal observation (Pickering et al., 2014) and therefore might be the best technique so far. Unfortunately, it was known upfront that the framework of this research would neither allow a personal structured observation nor a video surveillance. In order to address this potential bias it was decided to not just rely on the self-reported number of HWWS but to supplement it with the test of the critical situations which is resistant to social desirability and by taking these two variables into account, obtain an acceptable measurement method.

Another difficulty was facing the fact that even though some of the students would not be able to write, a questionnaire had to be the means of choice, because otherwise it would have been not possible to retrieve sufficient data, regarding the time interviews would have taken. Thus, the number of HWWS per day was queried by a number bar with a maximum of 15+ times and

not an open answer format. To compare means between the groups, 15+ times had to be coded as 16 times, leading to a ceiling effect in one of the schools from the F4WO group and in the control group, leaving no space for improvement and making it hard to interpret the results at all. Remarkably, this ceiling effect did not occur in all groups which points to another limitation of the present study, the heterogeneity of the sample. Students from five different schools were recruited and the schools, not the students, were randomly allocated to the different intervention groups. Although this study treated the students and the intervention groups as if they would all have come from the same sample, they actually might represent different cohorts and results of the intervention groups might therefore be biased from characteristics of the schools, particularly in the control group which consisted of students from one school only. Analysing the results from T1 strengthened this assumption and did reveal significant differences between the groups, although not explaining them. Yet, there was a negative relation between age and the number of HWWS and younger students did report to wash their hands more often, indicating that age might play a role in the actual behavior. But in the light of the fact that this relation is foremost based on the reports of the students from the control group who were two years younger on average and did all report to wash their hands more than 15 times per day, another explanation seems more likely. The number of washing their hands more than 15 times every day appears unrealistically high, especially at T1, so maybe it simply reflects that older students might have answered the questions more authentically. Despite, telling all of the students that the test is not about right and wrong, social desirability might have been bigger amongst the younger students since they seemed to be more intimidated from the presence of the intervention team, avoiding mistakes and trying to complete the questionnaire rather “correct” than authentic. The older students might have comprehended better that they can benefit from the questionnaire the most if they would answer truthfully, since it is a method to improve the training they would receive.

By standardizing the questionnaire and having it played out loud instead of relying on the translation of a translator or the teacher, it was tried to minimize their influence on the results, but of course cannot be ruled out completely. The role of teachers and head-masters in a healthy school environment and a vivid school culture can't be underestimated, even though interventions and the F4W program pay particular attention to empower the students as agents of change and to implement institutional structures as through the SWCs, for example. Nevertheless, a SWC can be just as active and productive as it is authorized and approved by the schools and if their efforts are not supported from the school itself, will not be able to ignite

a lasting behavior change. Within the given time which was spent at the five schools, it was not possible to get deeper insights in how far the SWC's are actively productive at the particular schools and in how far regular WASH sensitizing was already part of school routine. Consequently, it was not possible to assess students' prior participation in any trainings and it could not be presumed that they possess the same prior knowledge. However, basic data was measured at T1 and comparing the change of the score between the groups and not the score itself, addresses the unclarified preconditions accordingly and represents a satisfactory approach to deal with the challenges of genuine differences between the groups. What remains questionable though, is in how far the participating students can be representative for the students of their particular schools and for primary students in Karamoja, in general. Participation in the F4W training was voluntary, so the number of students who could be recruited for the study was already limited and one can argue that these students possess more interest and willingness to learn about WASH and in case of the students from the SWCs, also prior factual knowledge. Therefore, teachers were explicitly asked to only recruit children who are not in the SWC, but again, this cannot be excluded completely. However, the number of participants in the F4W training was limited to 50, due to a decision of the intervention team not to a lack of more interested students willing to join the training. Hence, the results of the students can be considered to be representative, at least within the particular schools.

4.2 Implications for implementation intentions

The study demonstrates that implementation intentions can be a helpful supplement for behavior-change interventions in the WASH context. Although, the hypotheses could not be confirmed and students in the F4W+II group did not improve significantly more than the students in the F4WO group, they did improve remarkably. On average, they better diagnosed the most critical situations after the intervention and they did report to start washing their hands more often than before. But looking at an individual level provides more insights, because above all, the implementation intentions did help the children who were not able to pinpoint HWWS before eating as a critical event at T1. 70 % of them did so after the Intervention which is particularly striking since none of the students in the control and the F4WO group who missed to mark the particular pictogram at T1 did identify it correctly at T2.

Considering that this is the first study which used implementation intentions in primary schools in rural areas of countries in the global south, it contributes important implications for the use of implementation intentions in the field. While implementation intentions in the field are usually customized by instructing participants to form their own if-then plans

(Gollwitzer,1993), the findings of the presented research are consistent with studies, pointing out that when working with children, providing prefabricated implementation intentions leads to promising results. For example, Armitage and Sprigg (2010) have successfully provided particular implementation intentions for school children in an inner city primary school in England, arguing that asking the children to repeat the plans aloud assures sufficient fidelity to the manipulation. Another important finding is the fact that just very few students could actually consciously recall the plans. Even from the students who did benefit the most by learning to identify the event of eating as highly critical, just one was able to rewrite the according plan. Maybe, the challenge of writing was discouraging and the threshold higher as initially thought, maybe students were confused what language to use (even though, they were instructed to use the language which suits them best) or maybe a written recall was too difficult because they just verbally repeated the plans and did not write it down in the first place. However, this finding complements prior research which demonstrates that action initiation through implementation intention does not require further conscious intend (Lengfelder & Gollwitzer., 2001) and that an intended goal-directed behavior can be triggered even by the subliminal presentation of critical cues (Bayer, Achtziger, Gollwitzer & Moskowitz, 2009). Consequently, it suits the theoretical framework behind the implementation intentions, namely a heightened accessibility of a mental representation of the critical cue (Aarts, Dijksterhuis and Midden, 1999; Parks-Stamm, Gollwitzer & Oettingen, 2007) and the automatization of the goal-directed behavior. In addition, mental imagery is supposed to strengthen the cue-response link (Knäuper et al., 2009), enhancing the process of the automatization of the goal- directed response (Gollwitzer & Sheeran, 2006), and the present research displays that. Therefore, mental imagery represent an expedient and valuable complement in the application of implementation intentions, especially when there are challenges due to language difficulties.

4.3 Indicators of handwashing practice

Once more, it became obvious that above all, there is an urge for the development of reliable indicators of handwashing practice. Structured observations, even though far away from having no costs for the discussed reasons, still give the best indication of handwashing behavior. Unfortunately, they are pretty resource-intensive and therefore not applicable in a lot of situations, especially not in the daily work of NGO fieldworkers. Future research needs to focus on successfully deployed indicators and combinations of them, considering the context and the particular setting. Thus, studies which compare the performance of indicators within certain populations, treating structured observation, or if possible, long time video surveillance as the gold standard, can be of great help to establish best-practice methods. Due to the described

challenges of dealing with students from different schools, it would be highly recommendable to test and compare different approaches and interventions within the same school first.

However, in case of the presented research, the applied pictogram matrix turned out to be a promising approach, not necessarily reliant on reading and writing skills of the participants. In contrast, asking for the number of HWWS led to the usual biases of self-reports and did not yield satisfactory results. Hence, a continuous development of the picture matrix seems to be reasonable. For example, asking for the number of HWWS within the matrix (e.g. “*How many times did you wash your hands yesterday within the particular situations?*”) or combining it with an approach called Pocket Voting (Biran et al., 2008) which asks for five options how to react to certain events (water, stone, ash, soap or not washed).

4.4 Implications for future WASH interventions

Within the given framework of this research it was not possible to follow the recommendations of Mosler’s RANAS Model (Mosler, 2012) which proposes an eight-step, general protocol for conducting behaviour change. Namely *Defining target behaviour and population; Formative research; Identifying behavioural factors; Measuring behavioural factors; Defining target factors; Defining interventions; Evaluating interventions & Evaluating sustainability.*

Since the RANAS Model is focusing on changes on household level, further research which adapts the model for interventions on a school level would be highly desirable. Interviews and questionnaires with school children based on this model could reveal important information about the underlying psychological factors related to handwashing-behavior and would help to tailor the accordant intervention.

Again, this is resource-intensive and regularly applying these eight steps in the development of health behavior change trainings and campaigns seems to be far from reality, but hopefully the few studies following up on this will reveal convincing insights, helping to construct more feasible and applicable ways to implement theory-based and evidence-based interventions when resources are scarce.

However, the presented study demonstrates that it is relatively easy to include elements which verifiably aim to target on the self-regulating factors of behaviour change in ongoing interventions. By providing prefabricated implementation intentions, many students could be approached at the same time and it was additionally possible to complement the plans by mental imagery. Since most of the children could not recall the plans at T2, exploring different ways

of presenting the implementation intentions and their different effects on the recall and the dependent variables would be another interesting field to tap in for further studies.

For the F4W intervention in particular, it would be even possible to integrate the implementation intentions into the drills without explicitly telling the kids that these are plans, helping them to facilitate goal striving. For example, drill No.4 and No.7 (see Appendix 1) which consist of passing on the ball and a WASH message at the same time are predestined to do so. Instead of formulating messages like *“you must wash your hands after the toilet”* or *“we should avoid open defecation”*, the children can be instructed to formulate their messages as “if-then” plans. Since it is part of the training to discuss the various challenges that the students are facing within the WASH-context, this feedback round could be also used for mental contrasting (Oettingen & Gollwitzer, 2010) and to come up with more “if-then”- plans which are addressing the particular challenge. Every student could pass on his personal if-then plan and thereby provide concrete guidelines how to deal with possible barriers and hindrances, enhancing the effect of the implementation intentions and the intervention.

5. Conclusion

This is the first study to have tested the effects of implementation intentions to enhance handwashing practice in Ugandan primary school children. The presented cost and time effective approach shows how it can be applied even when facing cultural and language challenges. By complementing an ongoing sensitizing program called Football4WASH through strategies of self-regulation, this approach is in line with recent research, suggesting that behavior change interventions should aim to target both, the motivational and the volitional phase of action. Children did benefit from the instructions of the provided “if-then” plans, even though it cannot be concluded that the intervention with the additional implementation intentions is in this particular setting superior to the standard intervention. It should be mentioned however, that results have to be handled with caution, since it is speculative in how far the tested indicators relate to true handwashing-behavior. The difficulties in interpreting the obtained results indicate that future research urgently needs to work on the development of applicable and reliable indicators for handwashing-behavior. Bearing in mind that the framework of the study did not allow to pretest the method which was used, nor to ensure that the obtained effects can be sustained in the long run, it is considered to display a good starting point for further studies. Hopefully the presented approach can and will be refined, but it is

certainly promising, encouraging us to widen the scope of the application of scientifically established strategies, such as implementation intentions, even in settings less ordinary.

6. References

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7. Appendix

Appendix 1: Questionnaire F4W

Football4WASH Questionnaire implementation intentions

- School:
- Name:
- Age:

Ageunet

Instruction

Iyakasi ba gidwe? Ee, elosio iwon kona abolia epira: ngolo elimokinitai ekiro “ Epira kaakilotanar“. Nait eroko iwon nyegeuna abolia, emasi ojenete guna itiyao.

„Dear Kids, as you already know, today we’re going to have a football training together which is called “Football4WASH”. Before we start the football drills, we want you to do some small exercises... ”

Ngidwe eyakasi gakaratasio guna igiritai epite kaabolia kidiama nadeskia kus. Ngitap nait eroko getemara tosioma, emasi osioma dadang aiwapei.

You’ll find the exercises at your desk. Please don’t turn the sheets until I tell you to do so, so we can all start simultaneously.

Kidarutu paka akutakini ayong epirimbi golo egeunere dadag abolia.

I’m going to play the instructions which will tell you what to do from this audio record, so please, listen carefully.

Emam iyas akurianut kori akerit atemar anyu Toto kori Emwalim atemar nyetiyat ayong etic ejok .Lakini kikatakinito abogonokin ejok.

You don’t have to be afraid. Neither your parents nor your teachers will know your answers. The questions are not about right or wrong, and you will get no marks for it. Nevertheless, it would be good if you will answer the questions as honest as possible.

Ngai eyakatar akigiset eroko nyegeuna nabo?

Do you have any questions before we start with the first question?

Akigiset

Questions

Kibelukasi gaku karatasio tosioma epite golo egeunere:

„Please turn the questionnaires around now and we start with the first exercise. The first question is:

- *Ngarua gaai ilotanaria iyoung gakonikan naparan? Anierai paiyeni toceta enamba kori epei kori giyarei. Epei iges atemar ilotanari iyong gakonikan apei kilotaret bon aparan dadang. Ngiyarei iges atemar ilosi iyong gakan garua garei bon.*
- **How many times a day do you wash your hands with soap? If you are not sure, try to estimate the number as exact as possible. Please mark the particular number. 1 means once a day, 2 means twice a day and so on...**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	-----

Ee ejook nooi ibogonokis iyes gakiseta ejook. Sasa osioma nabo akaratas ace.

Perfect, you've already done a great job! We're coming to the second exercise. You have to turn over to the next page.

Itete iyes gipicai gatomon iyarei (20)?

Here you can see 20 small drawings. Please look at them carefully.

- *Anitete iyes gipicai luaa alipica ikitatamuni iyes akilotar gakan? Toceta enamba golo iseunit iyong. Emasi toceta gipicai gikan(5) alotoma gadakikai gauni (3)*
- **On which of the 20 situations you find in the drawings is it extremely important to wash your hands with soap? Please mark the five most important situations! Do not mark more than five!!! You have 3 minutes.**

Nyecamitai ituganan ekokoi aneni aginica, anikirika iyong akigir ginambai gikan(5) emasi kidaru guluce dang kirikakis.

Please do not copy from your neighbour. When you're done with your five marks, please wait till we proceed together.



Ekitiyakine golo a giyarei (2)

Part 2. Plans, Implementation Intention.

Epite golo ikitamere isua iyese atemar emasi oyonete epite kakiyar ejok. Iges atemar ejok ilosi ngakan gisaai dadag kesabuni.

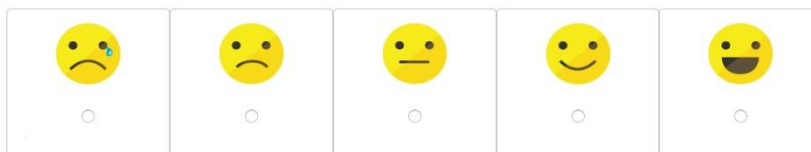
As we told you before, today it's all about learning how to reach the goal of staying healthy. The best way to stay healthy is not to get in contact with any pathogenic germs and harmful bacteria. Therefore, it's really crucial to wash your hands with soap frequently.

Kotere emam iyese gikimuriak obogonokisi alimunin iwon garua guna alalak kotere toloma epite kakilot gakan nakou. Anikipupunit iyong gakigeseta ejok emasi toceta epica epei.

To make sure that you won't forget this, we're going to learn two plans together which remind you to wash your hands in some particular situations. Before we learn these plans, I want you to answer the next two questions. For answering, please mark one of the faces you'll find on the next page

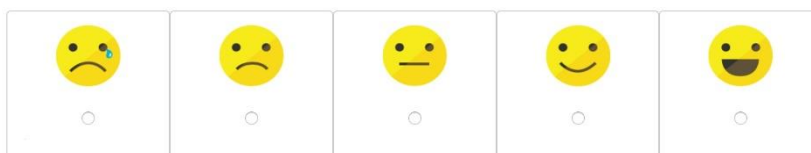
Iyeni ba iyong atemar emasi gakan ilotanario garua guna alalak kotere nyidekanakin atipei. Anikerai etatamas goloakire toceta eret ke pica a golo ekina. Anipainupit toceta eret golo egoit.

How important is it for you personally to wash your hands with soap regularly in order to stay healthy? Is it very important (smiling face), not important at all (sad face) or anywhere in between?



?) Inup bayong gakiro katemar emasi kilosetei gakan garua guna alalak. Itetei iyese gipicai gulu e ramitai a, anipa inupit iyong gakiro kakilotanar gakan toceta epica golo egoit. Anikinupit toceta golo elakara.

How sure are you that you're going to wash your hands with soap in the future frequently? Are you not sure at all (sad face), very sure (smiling face) or anywhere in between?



Alosi ayong tokona ageuni abolia. Topupete mono ejok todapakisi nakou kotere takae ibogonokinete alomunun.

I will play the first plan for you. Please listen to it carefully first and try to remember it. Then we are going to repeat it three times saying it out loud.

Eplan 1: Adaun ayong a lomun a locoron emasi elota gakan. Tobogonokisi iyesbon

If I went to the toilet then I will wash my hands with soap first!

Irasi ba iyes epite itiyaere. Emasi iyes tobogonokisi garua guna alalak.

Okay, you've heard the plan. I want you to repeat the plan three times, saying it out loud.

Visualization Plan1:

Toram iyong epica anakou kon epite golo iyakar iyong locoron ka lore , kori losukul kori iwace

Please imagine that you are using a toilet, come up with a mental image of the situation. This can be the toilet here at the school or as well the toilet at home or where ever you are frequently using a toilet.

Ikoni ecoron ai alokala eyakatar aruatata? E yayi epuke a , kikatak atamun anakou.

How does this toilet look like? Which colour have the walls? Is there a door? Which colour has the door? Please try to visualize this as detailed as possible.

Anikirikikak akibobon kori akiluat tojou a kilotar gakan, itei iyong epite golo eleliata gakipi kacuma nakan kon irigai iyong esabuni.

Now imagine you're done. You get up, put your clothes back on and you go to the next water tap. Imagine how you open the tap, how the water flows over your hands. How you rub your hands with soap and how you clean them again. You turn of the water tap and you look at your clean hands.

Abogonokin eplan 1:

Repetition Plan 1:

Anieroko nyegeuna eplan golo agiyarei emasi obogonokisi mono elpan golo kepei

Before we're continuing with the second plan, we repeat the first plan again.

-

Alakara nooi itiyata iyes etic ejok nooi.E losia kona iwoni akiirar eplan golo a giyarei , obogonokisi agarua guna alalak kotere toloma nakes.

Thank you very much, you did great. Now we listen to the second plan. Again, please listen to the plan first and try to remember it. Then we're repeating it again three times.

Eplan 2: Anieroko ayong nyimuja emasi elota gakan.

Plan 2: If I'm going to eat something, then I will wash my hands with soap first.

Ikamut ba iyes eplan, tolimutu nait iyes bon.

Okay, you've heard the plan. I want you to repeat the plan after me three times, saying it out loud

Visualization Plan 2:

Anianatameta kon itam iyong atamar ebe adol takona esaa golo kaakimuj, iyesikini iyong ibore gnitiyai kerei abolia kori akisiom

Now please imagine, you're going to have food. You stop doing whatever you are doing in this moment, either it is playing or studying or something else.

Anilosi iyong akimuj itori nacuma agakipi, totam epite golo igaria iyong acuma kotere gakipi eleleunete nakan kon irigai iyong esabuni nakan, akilailar tayanjua gakan elayete.

On the way to your food, imagine you go to the water tap first. Imagine how you open the tap, how the water flows over your hands. How you rub your hands with soap and how you clean them again. You turn of the water tap and you look at your clean hands.

Repetition Plan 2:

Elosio kona iwoni abogonokini esiomet iyok dadag

Okay, great. To conclude the exercises we repeat the second plan one more time.

Alakara nooi , itiyata iyes dadag etic ejok golo ka Epira ka Akilotanar

Thank you so much for your great participation and have a lot of fun with the Football4WASH☺

Appendix 2: Football4WASH Manual

Topic: Toilet Hygiene

Drill 1: Toilet sequence

Age: 10+

Equipment: 2 balls, 15 cones, 2 tyres, Hand washing centre, two rolls of toilet paper

Set – Up:

Five centres are set up, and marked centre A, B, C, D and E (the hand washing facility).

The centres are spaces out in a square or pentagon, 15 – 20 feet from each other.

The distance between A and B is marked with 6-8 cones spaced 3-5 feet from each other and is used for dribbling. At centre D, there are two or three targets (tyres, or any circular target) stationed at different levels or heights.

The Drill:

The drill starts at centre A when a player picks a ball and dribbles through the cones to centre B. Upon reaching centre B, the player then starts to juggle until s/he reaches centre C. On reaching centre C, the player must try to shoot the ball into one of the targets at centre D.

If s/he fails to hit the target, s/he should go to the target and ‘clean’ it. S/he then proceeds to centre E for hand washing.

WASH Representation:

The ball represents feces/shit/poo/pupu.

Dribbling from centre A to centre B represents the community we leave in. The player wants to go to the toilet. The player must not knock the cones and try to go through the cones as fast as possible. Our communities are filled with excreta and some with piles of feces. The player must go through the open defecation spaces without knocking/stepping on the piles of feces represented by the cones.

From centre B to C, the player must make sure s/he does not drop the ball to the ground. S/he needs to keep up so as to avoid open defecation.

At centre C, the toilet, the player must deposit his poo into the toilet/latrine pit. If the player fails to score through the target, s/he is required to clean the toilet. S/he then cleans himself and then proceeds to the hand washing centre.

Progression &Improvisation:

The coach may also allow players to just kick the ball slightly into the air using their thighs and then holding it with their hands before it can drop to the ground.

The coach may modify the target by adjusting the distance between C and D, or availing more options for targets. The coach may use cardboards with illustrations of a toilet/latrine pit for targets.

Football/Coaching Tip: Dribbling, Juggling, Shooting

Note: During the football part of the drill, the player is only required to dribble, juggle and shoot. The player should not continue to the hand-washing centre after shooting. Hand-washing should only happen during the Football + WASH session of the drill.

Life skills:

Avoid open defecations, Proper use of the toilet, Hand washing

The Coach/Instructor should help the players understand the WASH practices represented by the drill. Encourage the players to try again when they fail at dribbling/juggling/shooting.

Topic: Toilet Hygiene

Drill 2: Toilet Use

Age: 10+

Equipment: 2 balls, 5 cones, 1 Tyre, Hand washing centre, two rolls of toilet paper

Set – Up:

Three centres are set up, and marked centre A, B and C (the hand washing facility).

The centres are spaced out in a triangle, 15 – 20 feet from each other.

The distance between A and B is for juggling. The centre B is marked by a big tyre, the pit latrine.

The Drill:

The drill starts at centre A when a player picks a ball and juggles up to centre B. The player can use any technique of juggling. The essence is to keep the ball up, and prevent it from dropping to the ground. Upon reaching centre B, the player dribbles the ball around the tyre, making a 360° turn with the ball around the tyre at centre B. He then uses his feet to put the ball inside the tyre.

Under the Football + WASH session, the player ‘cleans up’ and proceeds to centre C for hand washing.

WASH Representation:

The player is going to the toilet/latrine. The ball represents feces/shit/poo/pupu.

From centre A to B, the player must make sure s/he keeps the ball up, and try not to drop the ball to the ground implying s/he doesn’t practice open defecation.

At centre B, the toilet, after the 360° turn the player must deposit his poo into the toilet/latrine pit.

Progression

Instead of juggling, the coach may also allow players to just kick the ball slightly into the air using their thighs and then holding it with their hands before it can drop to the ground.

The coach may modify the target by adjusting the distance between A and B.

Football/Coaching Tip: Juggling, Turning

Note: The ‘toilet’ can be represented by a big tyre, or any object where they can just ‘lift and drop’ the ball with their feet. Pay attention to the hand-washing and help the participants to do it correctly.

Life skills: Avoid open defecations, Proper use of the toilet, Hand washing

The Coach/Instructor must explain to the players the WASH interpretations during the drill. S/he should allow the players take enough turns on the drill and encourage them to try again when they fail.

Topic: Behavioral Change

Drill 3: Risky Behaviour

Age: 12+

Equipment: 1 ball, 20 cones, 12 bibs (6 red, 6 blue)

Set – Up:

A playing area of 50 x 20 ft is marked out with cones. The area is then divided into three parts A, C and B. The middle third, C, is relatively smaller compared to the extreme two thirds and is marked as the no-go zone. No play is permitted in area C.

The Drill:

The group of players is divided into two teams of six each, team A and team B. Each team has a different colour of bibs. Team A takes the extreme third on the left (area A), while Team B takes the extreme third on the right (area B). The middle area (area C) is left blank, and no one is allowed to go there.

To start play, team A starts with the ball. The objective is to keep possession of the ball by passing it around to each other of the same team (team A) in their own third. Team B sends over three players to chase for the ball in the opponent third. Team A must make sure they don't lose the ball. When one of the team B players 'steals' the ball, s/he kicks/passes/throws the ball back to his team mates in area B. In the process of kicking/passing/throwing the ball back to their team mates, the ball should fly over area C, the middle third. The ball should not touch ground in the middle third.

When team B receives the ball, all the team B players must first return to their area (area B) before play can resume. Team B must keep possession of the ball by passing it around to team mates in area B. Team A also sends three players to chase for the ball, and the games goes on.

The ball should be given to the opponent team if it hits the middle/forbidden area, or goes out.

WASH Representation:

The football emphasis is on keeping possession and making sure your team does not lose the ball. The WASH emphasis is on the forbidden area, C. This area is called the area of risky behaviour. When a ball hits ground in area C, the coach must call off the player who has kicked the ball in this area. S/he has practiced WASH risky behaviour. The coach can then tell the player the risky behaviour he has practiced from the variety of options such as drinking unboiled water, contacting typhoid, or practicing open defecation. The player should then be rested for 1-2 minutes before he can return to the field of play.

Progression

The coach can also ask the players to do handball/netball instead of passing the ball around using their feet, to make sure the teams have more fun.

Football/Coaching Tip: Passing, Spacing, Close control

Note: Choose from a variety of risky behaviour, and help the victims overcome the consequences during the rest, by advising on the alternative safe behaviour.

Life skills: Practice safe behaviours to avoid water-borne diseases.

The Coach/Instructor has to emphasise the importance of the forbidden area, and the consequent risks of the ball hitting in the area.

Topic: Behavioral Change

Drill 4: Communication

Age: 12+

Equipment: 1 ball, 20 cones, 12 bibs (6 red, 6 blue)

Set – Up:

A playing area of 40 x 20 ft is marked out with cones. The area is then divided into two parts A and B.

The Drill:

The group of players is divided into two teams of six each, team A and team B. Each team has a different colour of bibs. Team A takes half A while Team B takes half B.

To start play, team A starts with the ball. The objective is to keep possession of the ball by passing it around to each other of the same team (team A) in their own half. Team B sends over three players to chase for the ball in the opponent half. Team A must ensure they don't lose the ball. When one of the team B players 'steals' the ball, s/he kicks/passes/throws the ball back to his team mates in area B.

In the process of kicking/passing/throwing the ball back to their team mates, the player should accompany his pass/kick/throw with a WASH message to his/her team mates, e.g. "we must drink boiled water," "we should avoid open defecation," "wash your hands after visiting the toilet."

The ball should be given to the opponent team if the player doesn't accompany his pass with a WASH message after stealing the ball from the opponents.

WASH Representation:

The players use this drill to show their mastery of WASH messages and the ability to express it and communicate the messages to their colleagues. When we know anything about WASH, we should be able to share it with other members of the community.

Progression

The coach can adjust the game by asking everyone to say a WASH message for every pass they make. Players should not say the same one message every time. There should be a variety of messages throughout the game.

Football/Coaching Tip: Passing, Spacing, Close control

Note: Choose from a variety of risky behaviour, and help the victims overcome the consequences during the rest, by advising on the alternative safe behaviour.

Life skills: Communication, Sharing

The Coach/Instructor should consider what the players already know and then empower them with more knowledge about WASH to share with their communities.

Topic: WASH Knowledge

Drill 5: True/False**Age:** All**Equipment:** 4 balls, 12 cones**Set – Up:**

Set up a simple playing area of 40 x 30 ft is marked out with cones. One end of the area is marked with blue cones to imply the TRUE side, while other is marked with red cones to represent the false side.

The Drill:

Supply the players with the balls, and instruct them to make short dribbles within the playing area. The player with a ball should make 2 touches, and the third touch make a short pass to the nearby player who doesn't have a ball. Meanwhile all the players must keep on their toes. There is no standing. If a player doesn't have a ball, they should look for it by jogging around until they find a ball.

After every two minutes, the coach blows a whistle and play stops. The coach then makes a FACT/FICTION statement on WASH.

Players then sprint to the side they think is correct in relation to the statement.

The players who move to the correct side then return to the playing area for the next round, and the drill is repeated until the last player who is then declared the winner.

WASH Representation:

The drill is to demonstrate how certain the players are about general WASH information.

Progression

The drill can alternatively be done without eliminations and/or winner stay basis. The coach then has to call the two groups on either sides of TRUE and FALSE sides. The two groups have to present an argument accounting why they moved to the respective side.

Football/Coaching Tip: Dribbling, Short passes

Note: Make a variety of WASH statements, be sure to include those statements that will divide the group into two sides. After every round, explain to the group why the particular side is correct/wrong.

Life skills: Listening, Decision making

The Coach/Instructor should help the participants learn from the drill and not move merely by peer influence. At every round, make it a point to explain the statement and the right choice of side.

Topic: Water Use

Drill 6: Protect the Water Source

Age: All

Equipment: 6 balls, 13 cones

Set – Up:

Make a small square of 10 x 10 ft. Put a cone (preferably a blue cone) in the middle of the square. The square forms a defensive ring around the blue cone.

Mark off a bigger ring of eight cones around the square.

The Drill:

The inner square is the defensive ring, and has four players standing between each two cones. The remaining players form the outer/attacking ring. The attackers must shoot footballs with the aim of hitting the inner cone. The defenders must defend against every ball that tries to hit the inner cone.

WASH Representation:

The cone in the middle of the square represents the water source which must be protected. The outer ring represents all the germs and contaminants that contaminate the water and make it unsafe for use.

The inner square represent all the efforts that the community does to safe guard and protect the water source from contamination.

Progression

The drill can be adjusted by increasing the footballs in the outer ring, or increasing/decreasing the distance between the defensive and attacking rings. The coach may also increase/decrease the number of attackers/defenders.

Football/Coaching Tip: Shooting, Targeting, Defending

Note: Discourage the players from shooting above knee levels to avoid hurting the defenders. Swap the defenders and let other players take turns at shooting and defending.

Life skills: Focusing, Communal work, Conservation of water resource

The Coach/Instructor should help the players the players, both the defenders and attackers to understand the importance of water and that it is a precious resource that must protected jealously.

Topic: Communication

Drill 7: WASH Sequence

Age: All

Equipment: 2 balls, 10 cones (5 blue, 5 red)

Set – Up:

The drill is set up with 4 blue cones spaced out in a straight line 5 ft from each other. Another line of 4 red cones is also set up directly opposite the blue line. To one end of the blue line is placed a blue cone spaced from the line to act as a starting point. One red cone is also put at the other end of the red line to mark the starting point for the red cones. There should be enough space between the blue and red lines of cones to allow for to and fro movements during the drill.

The Drill:

A pile of players, say 3-4 players, line up behind the isolated blue cone, while another pile lines up behind the isolated red cone. At the lines, each cone should be occupied by one player.

The first player at the blue cone starts with the ball and initiates a ‘give and go.’ He passes to the first player in the blue line, and moves into space in the middle space to receive the ball. He then passes it to the next player and moves into space to receive the ball again from the player. He continues this passing and getting back the ball until he has gotten back the ball from the last player in the line, and then he hands over the ball to the player waiting in the pile of players at the isolated red cone.

The first player at the isolated red cone is also supposed to begin the drill at the same time like the first player at the blue cone, s/he must instead pass to the players at the red cone. When he receives the ball from the last player, s/he must hand over the ball to the player waiting in the pile of players at the isolated blue cone.

The player doesn’t get the ball back if s/he doesn’t say out a clear WASH message.

WASH Representation:

The different lines of players represent our community. The ball represents a WASH message that is passed to the members in our community. The player with the ball must create his/her own sequence of four different WASH messages that he wants to pass to his community. For every pass, s/he must say out loudly one different WASH message for every pass he makes to the players in the line.

Progression

If passing with the legs is difficult for the players, the coach can allow the players to use hands, i.e. handball/netball.

Football/Coaching Tip: Passing, Spacing, Close control

Note: The players can say the WASH messages in their native languages.

Life skills: Communication

The Coach/Instructor should encourage the players don’t use the same messages/statement during a single sequence. Encourage the players to use a variety of topics/statements/messages.

Topic: Toilet Hygiene

Drill 8: Germ in the middle

Age: 12 +

Equipment: 1 ball, 5 bibs each labeled, in this order;

1. GET TOILET PAPER
2. GO TO THE TOILET
3. MAKE YOUR POO
4. CLEAN YOURSELF
5. WASH YOUR HANDS

Set – Up:

A small circle of six cones is made, with each cone about 8ft from each other. Five players stand in between each two cones. Each of them is given a bib arranged in the above order.

The Drill:

The five players must pass the ball to each other in the circle, but in that specific order. The ball must be played from number 1, to 2, to 3, to 4 and to 5 then returned to 1 and so on. Number 2 can only receive from number 1 and only pass to number 3 and so on.

There is a player in the middle chasing for the ball. When s/he touches the ball, or it goes out, s/he then swaps with that player. S/he then takes the bib from that player and takes his/her place in the circle who then comes to the middle and begins to chase for the ball.

WASH Representation:

The drill represents the sequence of toileting. The player in the middle represents a germ or disease or bacteria. We need to follow a very specific sequence when we use the toilet. That's why we need to only receive the ball from one specific number (player) and pass to only one specific number (player).

When this flow is interrupted by the germ, we get diseases.

Progression

If passing with the legs is difficult for the players, the coach can allow the players to use hands, i.e. handball/netball.

Football/Coaching Tip: Passing, Spacing, Close control

Note: The players should not stand stationary on the cone or in the circle. They can move around to find space when they need to receive the ball by getting away from the germ.

Life skills: Following procedure, Toileting

The Coach/Instructor should encourage the players to get away from the germ, find space and receive the ball. They can always read from the labels at the bibs to know the step that follows.

Appendix 3: Results from unpublished Welthungerhilfe WASH Survey Moroto, 2015

WASH Survey Moroto (January 2015)

886 households interviewed, 68 water points assessed, 43 water samples analysed

Major Findings:

Water:

90% of the households take water from boreholes;

91% of the households consider borehole water safer than water of the piped system;

61% of the households never treat water;

28% of the water points had unsafe water (turbidity or e-coli contamination);

82% of the households pay for water (in case of pump repair or regularly)

28% of the boreholes were not functional;

18% of the boreholes were at high risk (muddy environment, broken apron etc.);

Sanitation:

38% of the households practiced open defecation;

No organized garbage/ waste collection and disposal;

No faecal sludge disposal site;