MSc Thesis: Communication and Innovation studies (COM)

Topic: **Nurse-led health education on diarrheal prevention among the high-risk under-five children in Thimphu: Bhutan**

JULY 2012

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In partial fulfillment of the requirement for the
Degree of MSc. Health and Society

A thesis submitted to
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Acknowledgement

With my sincere gratitude, first of all I would like to thank my supervisor Dr. Marijn de Bruin for his continuous support and unending guidance against all odds during my thesis period with his patience and great knowledge. It would not have been possible to write this thesis without such encouragement, kind support and very constructive feedback, for which I would remain extremely grateful and indebted ever. He has been my inspiration until the completion of my thesis and he has never put me under pressure and stress in academic wise. Writing thesis was never easy for me but I have great satisfaction and joy over my achievement at the end. Without the much deeper and clear knowledge about the subject matter, I had to burn mid night oil to get things right and clear for myself to write my thesis with clear objectives. This thesis work had indeed taught me the meaning of endeavor, endurance and persistence in one's life and taught me a lot about doing research work.

I would like to take this opportunity to extend my heartfelt gratitude to my study advisor, Ir. Gerry van Nieuwenhoven for her constant encouragement and support in this study as well as in facilitation for my overall MSc program. I also take this moment to thank and show my great appreciation and gratitude to Mr. Bob Mulder, PhD student of Communication and innovation studies for supporting me in every possible way and giving me positive feedbacks on my report. I would also like to thank kind people and friends around me who have supported and encouraged during times of stress and depression. Beyond everything, I would like to extend my appreciation to nurses of the health clinics for willingly participating in this study despite their pressing schedule with patients. Without such kind support, this thesis would not have materialized.

Finally yet importantly, I would like to humbly acknowledge Government of the Netherlands for sponsoring me to take up Master's degree course in Wageningen University and Research for two years that is considered as leading education and research centers in social sciences. Library facilities are amazing and access to online articles is simply great. Personally, without such scholarship I would not have dreamt of pursuing my Master degree in Europe simply because of cost involved.

Abstract

BACKGROUND

Diarrhea is one of the major contributing diseases for high child morbidity and mortality, globally. The impact of diarrhea is more pronounced in developing countries and is seen as poverty driven disease. Some studies reveal the adverse effect of increased diarrheal episodes during early childhood on quality of life. Over the years many interventions has been initiated to fight against diarrheal diseases by organizations like WHO, UNICEF. Tremendous efforts have been made in bringing down the mortality due to diarrhea, however morbidity remains high if not increasing then stagnant, worldwide. In Bhutan, diarrhea is still the major contributor to the high morbidity and mortality amongst under-five children. Globally, many studies have been done to affirm that interventions targeting behaviors does reduce the incidence due diarrhea, . One of the intervention types studied was health education. Health education can be given in any settings one of which is the health clinics. Nurses in these clinics serves as the rightful people to communicate the preventive behaviors, health care seeking and treatment adherence behaviors to the mothers of high-risk patients related to diarrhea. Nevertheless, so far no studies have been carried out to examine the content and the quality of health education given by the nurses in these clinics and how the health education is influenced by factors such as individual determinants and organizational determinants.

OBJECTIVES

To address the knowledge gap, this study aimed at exploring the current content and the quality of health education given by the nurses. The second aim was to examine the variability of health education at individual and clinical level.

DESIGN and SETTING

Observational cross-sectional design was employed for this study. This study was carried out in Thimphu, the capital of Bhutan. The content of the health education was determined through the health behaviors that were addressed by the nurse, while the quality of the health education is reported by considering the behaviors addressed, behavioral determinants targeted with behavior change techniques used and general communication style observed during the nurse-patient interactions.

PARTICIPANTS

For this study, seven health clinics were conveniently chosen and then two nurses (total n=10) from each clinics were interviewed. To see the how health education given in clinics influences the quality of health education the immediate manager were interviewed (n=5). Approximately four nurse-patient interactions were observed for each nurse.

MEASUREMENTS

Audio-tapped analysis of interactions observed during the outpatient encounter of the nurses and the in-depth interviews with the nurses and the immediate managers of the clinics with top-down approach formed the measurement units.

RESULTS

It is observed that nurses are aware of the importance of the preventive behaviors, when to seek medical help and how to prepare and administer ORS during diarrhea. The most commonly addressed behavior was the health care seeking behavior and the treatment adherence as compared to the preventive behaviors. Although nurses did good in addressing the health behaviors during interactions it is found that the nurse used very minimal behavior change techniques. Out of 38 BCTs the maximum BCTs used was four and the minimum was one. Nurses who had higher educational level used more of the BCTs. In general with the BCTs used by the nurses addressed the behavioral determinants poorly. General communication style was also found to be satisfactorily addressed although when interviewed the nurses reported the importance of conditions such as shared-decision making, empathy, actively listening to patients and reassuring the mothers during the interaction. The nurses who had separate room and who reported being happy with other colleagues seemed to do better in addressing the health behaviors and in use of general communication, although the behavioral determinants targeted were very low. Social norm, especially the role modeling was found to influence the nurses in giving health education. The quality of current health education given by the nurses after considering the health behaviors addressed, the behavioral determinants addressed and the general communication style varied between satisfactory and good. The category for quality was measured after each components (behaviors addressed, behavioral determinants addressed and observed general communication) during the interactions were converted into percentage (100%) and distributed amongst the

Overall, although the content of the health education was good however, the quality of health education was poor at nurse and clinic level.

CONCLUSIONS

At a content level the health education given by the most of the nurses addressed preventive behaviors, when to seek medical help and how to prepare and administer ORS. However, at the quality level the nurses most of the nurses did satisfactorily and the quality was associated with the communication style used and the BCTs used, or in other words the behavioral determinants by the BCTs. The quality of health education is seen to be different amongst the nurses and the clinics which are best explained by the influence of individual determinants and the organizational determinants. The individual determinants that is seen to be more pronounced were the social norm (role modeling) and seeing health education as part of job responsibility rather. Having a separate room let nurses do better in addressing the health behaviors and the general communication. While lack of role clarity and lack of good teamwork is observed to be influence the quality of health education.

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Acronyms and Glossary

AN	Assistant Nurse
ANM	Auxiliary Nurse Midwives
BHU	Basic Health Unit
BMIS	Bhutan Multiple Indicator Survey
BSc	Bachelors in Nursing
CDD	Control of Diarrheal Diseases
GNH	Gross National Happiness
GNM	General Nurse Midwives
IMCI	Integrated Management of Childhood Illness
MDG	Millennium Development Goals
MOH	Ministry of Health
NSB	National Statistical Bureau
OPD	Outpatient Department
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
UNICEF	United Nations International Children's Fund
U5	Under-five Children
VHW	Village Health Worker
WHO	World Health Organization
Dzongkhag	Administrative district
Gewog	Administrative block

Chapter 1

1 Introduction

1.1 Background

Diarrhea is one of the major contributors of under-five mortality and morbidity among children, especially in developing countries (Kosek et al., 2003, Unicef, 2009b, You et al., 2010). Under-five mortality is defined as the probability of a child dying before reaching the age of five per 1000 live births by WHO. Globally, 12 million children died in 1990 before reaching their fifth birthday. This number decreased to 7.6 million in 2010. The mortality rate per 1000 live births in under-five children too reduced from 88 in 1990 to 57 in 2010 (You et al., 2011). Nevertheless, the child mortality rate still remains to be the highest in Sub-Saharan Africa, where 1 in every 8 children dies before reaching the age of 5 and in Southern Asia where 1 in every 15 under-five children dies. The mortality rate for under-five children in Southern Asia as compared to the global figures is considerably higher at 66 in 2010 (You et al., 2011), while in Bhutan it was reported to be 61.5 in 2010 (Ministry of Health, 2011). Globally the causes for under-five children are accounted for pneumonia (18 percent), diarrheal diseases (15 percent), preterm birth complications (12 percent) and birth asphyxia (9 percent), rest being the malaria and under nutrition according the country's location and developmental progress (You et al., 2011). Every year ministry of health in Bhutan reports the most common cause of morbidity and mortality amongst under-five children at national level to be diarrheal diseases (Ministry of Health, 2011, Ministry of Health, 2012). Diarrheal diseases thus remain to be one of the highest contributors of still high morbidity and mortality amongst under-five in Bhutan.

The United Nations in the year 2000 developed Millennium Development Goals, which was adopted by all the 189 member countries (Unicef, 2010). Most of the countries endorsed the Millennium Development Goal 4 (MDG4), which calls for the reduction in mortality rate by two-thirds among under-five children between 1990 and 2015. This goals is being rigorously pursued by the member countries (Rajaratnam et al., 2010).

1.2 Problem statement

Diarrhea, especially in developing countries, is associated with hygiene and poverty (Parashar et al., 2006). Many organisms can cause diarrhea, but the most common one is the rotavirus. Rotaviruses are estimated to be responsible for approximately 527,000[1] deaths each year, with more than 85% of these deaths occurring largely in low-income countries in Africa and Asia, and over two million being hospitalized each year with marked dehydration (Parashar et al., 2003). Parashar and colleagues (2006) established that rotavirus infection is the leading cause for hospitalization among infants and young children due to diarrhea worldwide. Acute diarrhea results in dehydration, which is the loss of fluids and electrolytes from body, which can be fatal to the patient. Moreover, while persistent diarrhea can predispose children to malnutrition and affect growth and development, it can also make them more susceptible to other infectious diseases (Black et al., 1984, Martorell et al., 1975). Diarrheal episodes at an early age can have long-lasting and profound effects on fitness, cognition and schooling in later life (Guerrant et al., 2002). Thus, diarrhea can immensely influence the quality of life for children.

In order to combat the high morbidity and mortality of children World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and other technical partners developed the strategy called Integrated Management of Childhood Illness (IMCI; (Gove, 1997). IMCI is the strategy, which trains and empowers the health workers to assess and classify childhood illness and thereby enable proper management of childhood illness. IMCI has been rigorously implemented especially in developing countries and has been seen to have positive impact on child's health over all (Arifeen et al., 2009). Other initiatives like water and sanitation, oral rehydration therapy, and improving nutritional status of the child are some recommended methods to manage and prevent diarrhea (Unicef, 2009b). Likewise in Bhutan, the National Control of Diarrhea Diseases (NCDD) program was initiated in 1982 by the ministry of health, which became fully operational in 1984 (Ministry of Health). This program aggressively incorporates the Integrated Management of Childhood Illness (IMCI) strategy by training and educating health care givers, mothers and other health workers in the communities.

[1] Taken from Parashar et al., 2009

Literature suggests that preventive behaviors (for example, hand washing with soap, breastfeeding, water treatment at home level, proper weaning), early heath care seeking (such as, recognizing the danger signs like restlessness/irritability, sunken eyes, drinking poorly, presence of blood or mucous in the stool, increased frequency of diarrheal episodes) and treatment adherence (i.e. knowing how to prepare ORS, completing Zinc pills and antibiotics prescribed) can have a considerable impact on diarrhea related morbidity and mortality among under-five children (Huttly et al., 1997, Curtis and Cairncross, 2003, Fewtrell et al., 2005, Gupta et al., 2007, Ejemot et al., 2009). Curtis and Cairncross (2003) in their meta-analysis of 17 studies reported that washing hands with soap alone could reduce the risk of diarrheal diseases by 42-47% of 100%. While, Ejemot et al. (2009) found that interventions promoting hand washing resulted in 32% reduction in diarrhea episodes in children in low-or-middle income countries. Also, use of Oral rehydration solution during diarrheal episode is seen to reduce the mortality by 93 percentage (Munos et al., 2010). However, a major challenge is to have parents and children adopt these behaviors. For example, incomplete understanding of the use of the ORS has been associated to underutilization and improper use of ORS (Mull and Mull, 1988, Gupta et al., 2007).

Health education has been an often-utilized approach to promote preventive behavior change in mothers and therefore lead to reduction of diarrheal diseases (Ashworth and Feachem, 1985, Clemens and Stanton, 1987, Sheth and Obrah, 2004, Fewtrell et al., 2005). It has also been found to improved mothers' knowledge regarding danger signs and improved their health care seeking behavior (Dongre et al., 2009). Health education can be given in any settings (Glanz et al., 2008). One of the settings where health education can be given is clinics. Children suffering from diarrhea are brought in the clinic for medical help. Thus, these clinics serve as the unit for the mothers to receive information and awareness of the diseases and their prevention and treatments. The nurses in these clinics are the ones who are responsible for communicating with the parents the preventive, health care seeking and treatment behaviors. Thus, the nurse in these clinics plays a very crucial role in reaching out to the high-risk groups. The visiting mother and children can be considered as the high-risk group otherwise they would not be visiting the clinic in the first place. Seeing this opportunity for the health

education for the high-risk groups, it is surprising that no studies seem to have evaluated the content and the quality of health education given in these settings. Therefore, to bridge this knowledge-gap, this study aims to explore the content and quality of health education given by the nurses for diarrhea prevention during the encounter with mothers in these clinics. The second aim of this study is to explore what nurse-level or clinical-level factors are related to better or poor health education. The findings generated from this study may help to get comprehensive picture on what is the current content and quality of health education given in clinics, and what professional and organizational factors contribute to better health education and thus patient well-being.

1.3 Research questions

This study was guided by following research questions:

- What are the content and the quality of the health education given by the nurses in diarrheal prevention among high-risk under-five children who visit the clinics in Thimphu, Bhutan?
- What determines the variability of health counseling/education of diarrheal prevention among the health clinics in Thimphu, Bhutan: individual (nurse) determinants and organizational determinants?

1.4 Structure of the report

This research report is presented in five chapters. Following above chapter is the chapter two, which presents the theoretical framework that will guide this study and help to formulate the specific research questions of this study. Chapter three details out the overall process and methodology of study and chapter four presents the results of the analysis of the data collected for this study purpose. Finally, in chapter five discussions on major findings, the limitations and the conclusion are presented.

Chapter 2

2 Theoretical Framework

In this chapter, a theoretical framework will be presented to guide the research. First, there will be explanation on the relevance of patients' behaviors for prevention, early detection and adherence to treatment, and why patients would commit to these behaviors (section 2.1). Next, the link between these behaviors and their determinants with health communication will be explained, and a framework for the quality of care will be provided. This framework consists of the active ingredients of health communication (behavior change techniques: section 2.2) and the communication style and relationship indicators (section 2.4). Finally, a logical framework is developed to explore how the individual determinants of the nurses and the organizational determinants of the clinics lead to the variability in quality of health education given by the nurses.

2.1 Prevention, seeking care and adherence

In this section, efforts are made to understand the principal behaviors that have been recognized for the prevention of diarrhea. Individual determinants are discussed as to see how they can influence the exhibition of desired health behaviors thereby establishing the relationship between individual determinants and its influence on key health behaviors. Since, this study targets the under-five children, therefore parents of the children who come to the clinics are considered as the rightful person who could exercise those desired health behaviors. Based on the literature studies the following behaviors are seen to be having a great impact on the combating the diarrheal diseases among under-five children in developing countries.

Many studies suggest that the preventive behaviors have been successful in reducing the diarrheal incidences in developing countries. Huttly et al. (1997) in their systematic review of various studies on preventive measures concluded that preventive strategies like encouraging breastfeeding, good weaning practices and water treatment and sanitation has considerable impact on helping to prevent diarrhea in children. While taking an intervention in consideration, Curtis and Cairncross (2003) in their meta-analysis of 17 studies reported that washing hands with soap alone could reduce the risk of diarrheal diseases by 42-47% of 100%. Ejemot et al. (2009) found that interventions promoting hand washing (i.e., after toilet visits,

cleaning up a child or handling nappies, before eating and before preparing or handling food) resulted in 32% reduction in diarrhea episodes in children in low-or-middle income countries. . Hence, these studies and reviews demonstrate that preventive behaviors can considerably reduce the incidence of diarrhea.

Taffa and Chepngeno (2005) defined health care seeking as any attempt made by the mother (caregiver) to take an expert opinion or treatment from a biomedical health care provider outside the home during child's illness. Besides preventive behaviors, early management at home level and health seeking behavior in case of appearance of danger signs are also key strategies to reduce morbidity and mortality in Acute Diarrheal Diseases (ADD; (Gupta et al., 2007). Olango and Aboud (1990) from their study in rural Ethiopia concluded that mothers who were aware of the modern knowledge of diarrhea and its causes sought more health care than those who associated diarrhea with either teething or some other beliefs. The dangers signs that are associated with diarrheal diseases are fever, blood/mucus in the stool, increased frequency of watery stool, excessive vomiting, not feeding well, lethargic and dehydration (Unicef, 2009a). Enabling caretakers to recognize the danger signs can therefore enhance the health-care seeking behavior (Taffa and Chepngeno, 2005).

Oral rehydration solution is a salt-based mixture that needs to be dissolved in water and given to diarrheal patients. It replenishes the loss of water and electrolytes from body during diarrheal episodes. Loss of electrolytes from body can lead to dehydration and electrolyte imbalance which often is the major cause of death due to diarrheal (Unicef, 2009a). Oral rehydration solution alone is seen to prevent dehydration due to diarrhea and reduce mortality attributed to diarrhea by 93 percentage (Munos et al., 2010). However, a study done in Pakistan by Gupta et al. (2007) and Mull & Mull (1988) reported that mothers of sick children had incomplete understanding of the use of the ORS. Confusion on how to prepare ORS and to administer it was to under-utilization of ORS. Zinc supplement are prescribed in diarrheal diseases which reduces the duration and severity of acute and persistent diarrhea (Lukacik et al., 2008, Lazzerini and Ronfani, 2008). When the child presents with blood or mucous in stool and the diarrhea would not stop after the initial treatment of the ORS after three days it is considered to be an infective diarrhea and thus antibiotics such as amoxicillin oral

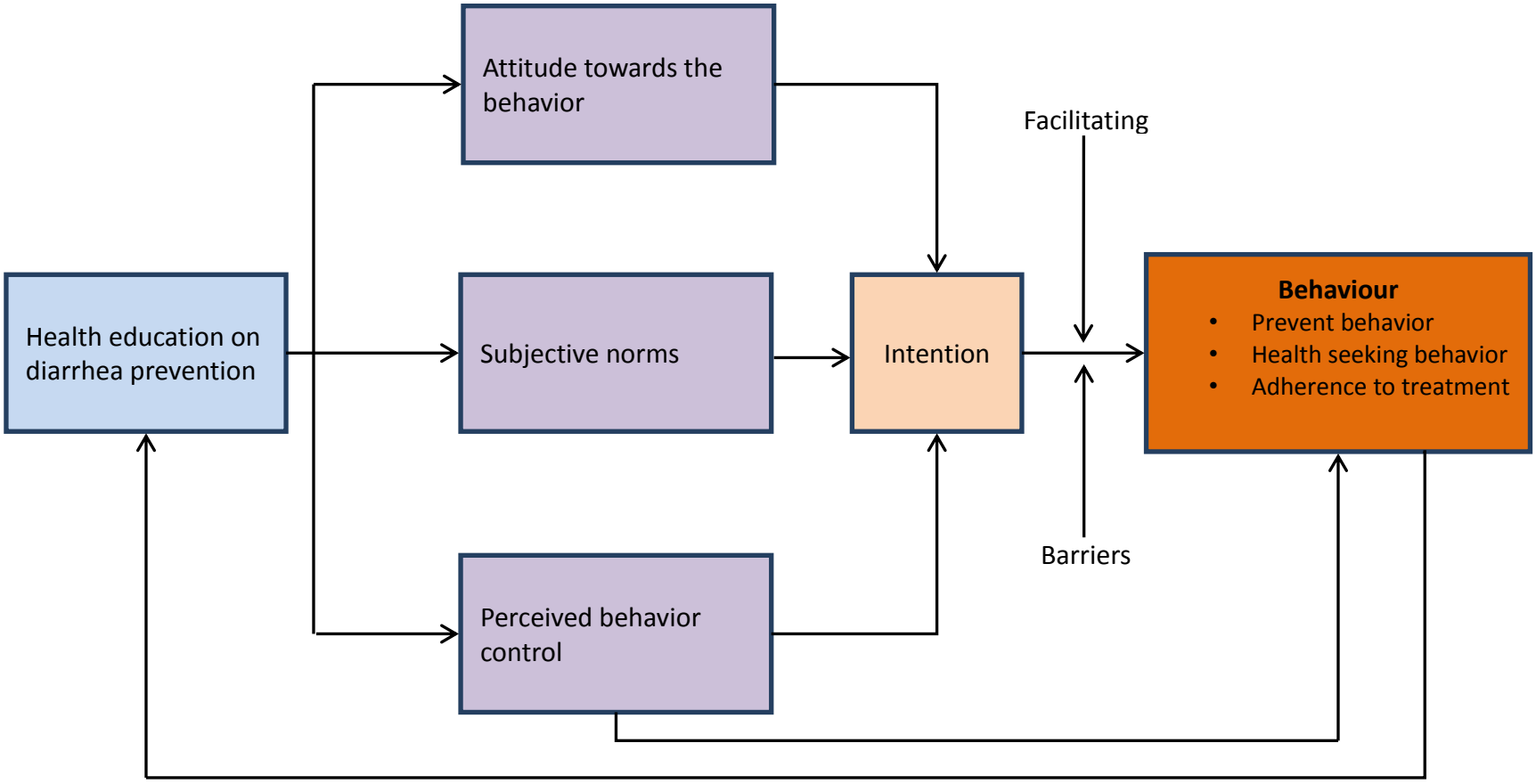
metronidazole, or cotrimoxazole, erythromycin, and chloramphenicol are prescribed according to disease management protocol (World Health, 2005). However, it is suggested that adequate levels of adherence are not often achieved (Gupta et al., 2007), which results in suboptimal treatment response and increased morbidity and mortality despite having adequate treatment available.

Thus, based on the studies done on combating diarrheas at behavioral level three key-behaviors can be recognized: i) Preventive behaviors; ii) early health seeking behavior; and iii) adherence to prescribed treatment. Promoting these behaviors through high quality of health education can contribute to further reduction of under-five morbidity and mortality. Therefore, to understand what comprises high-quality health education, it is fist important to explain the key determinants of people's health behaviors. These determinants are those determinants that the health educators should target to change in order to change people's behaviors.

2.2 Common determinants of health behavior: a theoretical perspective

Health behaviors are assumed to be influenced by several determinants at individual level and environmental level (Bartholomew et al., 2011). To help understand the behavior exhibition "Theory of Planned Behavior (TPB)" was used in this study context. The Theory of planned behavior is a theory designed to predict and explain human behavior in specific contexts and is an extension of the theory of reasoned action (Ajzen and Fishbein, 1980). The general model of Theory of Planned Behavior is presented below in Figure 1.

Figure 1: General Behavior model: Theory of Planned Behavior



According to Theory of planned behavior (Ajzen, (1991) the intention to perform a health behavior is determined by three different factors. The first components are beliefs about the outcomes of a particular behavior and the value attached to these outcomes, which shape people's *attitude*. Secondly, there are the normative beliefs, which are beliefs about the expectations people in one's environment have concerning the conduct of the health behavior, and people's motivation to comply with these norms (the subjective norm). Lastly, perceived behavioral controllability (PCB) is the perceived ease or difficulty with which one can perform the behavior. It is the perception of the factors that may facilitate or impede the exercising of the desired health behavior. These three components, the attitude, subjective norms and perceived behavior control are explained below.

Attitude towards a behavior is the degree to which performance of the behavior is positively or negatively valued (Bartholomew et al., 2011). Ajzen (2011) suggest that the likely *consequences* of the behavior can lead to either favorable or unfavorable attitude towards the behavior. Thus, stating that if one views the consequences of the behavior more positively then it is more likely that they built up a positive attitude, which conversely can lead to the adoption of the desired behavior. Applying the concept of attitudes to the three behavior described above, if the caregiver (mother or the ones that accompany child to the clinic) feels that the result of the behavior is going to be beneficial then the attitude towards adopting the health behavior is high according to TPB. For example, if parents believe if they exercise the preventive behaviors like maintaining hygiene and sanitation or washing hands with soap is going to prevent the child from getting diarrhea then they are more likely to exercise the behavior of keeping the surroundings and homes clean.

Similarly, if the parents find the benefit of visiting hospital before the child's condition becomes worse, early health care seeking behavior may be exhibited. This can be illustrated by several studies, for example, in the rural Egypt if the child was viewed as very sick then the child was taken to the health center (Langsten and Hill, 1995). While in Nairobi Taffa and Chepngeno (2005) found that the perceived severity was directly associated with the health care seeking behavior, indicating that the more sever the mother perceives child's sickness higher is the chances of making use of health services. Also knowing the importance of the ORS and other

treatments prescribed, and that these treatments need to be followed and finished, will enable the parents to see the benefit of the completing the treatment course. In short, it can be summed up that when parents view that a particular behavior can result in positive outcomes or the prevention of negative outcomes, they have a more of favorable attitude. This, in turn, might increase the possibility that parents adopt the relevant health behaviors.

The ***subjective norm***, the second component of the Theory of Planned Behavior is the beliefs about the normative expectations of important others (normative beliefs) (Ajzen, 2011). Subjective norms assess the perceived social pressures on the individual to perform or not to perform a particular behavior. The expectations perceived by an individual to perform a behavior can greatly influence the intention to exhibit the relevant health behavior. For example in the rural Guatemala Delgado et al. (1994) found that the advices of an elder women in home played a great role in a mother seeking health care when the child was sick. This normative belief to follow what elderly says can be very instrumental in performing the desired behavior like seeking early health care, in this case diarrhea especially in developing counties.

Perceived behavioral control refers to people's perceptions of their ability to perform a given behavior. It is comprised of two elements, namely people's perceived self-efficacy and the actual controllability of the behavior (Ajzen, 1991). Self-efficacy is one's belief in one's ability to succeed in specific situations and it plays very important role in approaching behavior change (Bartholomew et al., 2011). It is, for example, the perceived ease or difficulty of carrying out certain health behaviors like preparing and administrating ORS at home by the caregiver in this study context. The second aspect is the controllability of the desired behavior. Controllability is the extent to which the performance of the behavior is judged to be up to the individual. For example, mother wants to practice hand washing but there is no soap available or there is no proper water supply then she is not able do it. Sometimes if the mother feels that, her child is severely sick but then if hospital is not near then she is unable to take the child for medical care.

Attitudes, subjective norms and perceived behavioral control in combination lead to the formation of a behavioral ***intention*** (Ajzen, 1991). The intention to perform a behavior determines the performance of the desired behavior by an individual in near future (Ajzen,

1991). Ajzen (1991) also states that intentions to perform behaviors can be predicted with high accuracy from attitudes towards the behavior, subjective norms and perceived behavioral control. This intention together with perceptions of behavioral control leads to actual behavior. Thus, intention phase is the time during which an individual decides what to do and how to do it, for example, whether to practice the preventive behaviors like washing hands daily with soap, seek early health care when needed, or complete the prescribed diarrhea treatment. However, the formed intention may lead to exhibition of the behavior depending on the factors that either facilitates or impedes it. For example, if the mothers knows or have knowledge of how to prepare ORS or knows the benefit of ORS then she is very likely to prepare ORS and as well complete the recommended ORS from the health facilities. These facilitating and impeding conditions, which influences the actual performance of the health behavior in this study context, is beyond the scope of this study.

From the TPB it can be concluded that attitudes, subjective norms, and perceived behavioral control are key predictors of intentions, and intentions in turn of the relevant health behavior. Although knowledge is not included as a separate determinant in the theory, it is recognized that people base their attitudes and control beliefs on knowledge. Hence, high-quality health education should aim to provide people with the relevant knowledge, trigger positive attitude, organize a supportive social environment, and provide people with the skills and means to perform the behavior. Many theories describe behavior change techniques that can be used in health education to change these determinants (Abraham and Michie, 2008). Thus, in the following section the most important behavior change techniques are being described in order to establish the relationship between high quality health education and behavior change techniques in this study context.

2.3 Health education and Behavior change techniques (BCT)

WHO defines health education "as any combination of learning experiences designed to help individuals and communities to improve their health, by increasing their knowledge or influencing their attitudes". Health education has been demonstrated to be one way to increase the ability of the patients to manage diseases like Asthma, Diabetes, HIV/AIDS and some specific behavior in prevention of diarrhea (Clark et al., 1986, Clemens and Stanton, 1987,

Norton, 1998, de Bruin et al., 2010), by targeting the behavioral determinants. Behavior change techniques (BCT) have been used in several interventions to bring about changes in health behaviors, such as those concerning HIV/AIDS, smoking cessation, weight loss and diabetes.

Behavior change techniques refer to the specific strategies that are designed to change a particular determinant of health behavior. These techniques are derived from previous research and behavioral theories. Typically, an intervention contains a mix of these techniques, as they aim for various behavioral determinants in one program. Several authors (Abraham and Michie, 2008, Bartholomew et al., 2011) have made an overview of these techniques. For example Abraham and Michie (2008) described 26 BCTs which includes coding instructions on how to identify the techniques and the definitions of the techniques. De Bruin (2009) adapted an extended version of BCTs based on the Abraham and Bartholomew taxonomy, which is used in this study.

The taxonomy of the behavior change techniques used in this study consists of 38 BCTs. Each BCT are well defined and each targets certain determinants that influence the behaviors. For example, knowledge determinant is targeted by techniques like providing general information and increasing memory and understanding. Providing general information is coded when a nurse gave basic information on diarrhea, the symptoms of problematic diarrhea, and on the use of ORS. Whereas, nurses asking questions, clarifying what she told the mothers, elaborating on her actions and information given are some instances of coding for the technique increasing memory and understanding. Another example of techniques for modifying a determinant is those employing social influence. One of these technique is to 'mobilize the social norm of important others', which involves letting the person 'become aware of the expectations of important others'. For example, this is coded when the nurses refers to the doctors for the importance of giving the ORS or adhering to the prescribed medications. There are also multiple techniques targeting people's attitude. For example, 'Persuasive communication', this technique concerns arguments to strengthen the positive beliefs and weaken the negative beliefs about the behavior change. For example, a nurse may ask mother of what her beliefs are with regard to preventive behaviors and then he/she strengthens the positive beliefs that the mothers has, or add new arguments. An example of the available

techniques to influence self-efficacy is 'modeling', which involves showing the person how to perform the behavior correctly by either demonstrating individually or in a group. This could be nurses showing mothers how to prepare ORS and to give rightful amount of ORS after each stool. Next, there are several techniques related to intention and action planning. One example is to 'develop a medication intake schedule', which involves development of the duration, timing and way of using. This could be relevant if the nurses prescribe ORS, antibiotics or zinc pills and then develop a schedule as to when to eat the medicine like morning, afternoon and evening. Some final techniques described relate to the facilitation of behavior by removing barriers or facilitating the behavior. For example, a technique that can be used to improve action control is the use of cues; people can identify environmental prompts (e.g. alarm on a cell phone) that remind them of behaviors.

It is important to note that BCTs can be delivered top-down (e.g. by providing patients with instructions) or they can be tailored to the individual patients (e.g. link information to level of understanding of patients, together with patients decide on appropriate treatment and make a medication intake plan that fits with patients' life) (de Bruin et al., 2009). Since tailored communication is more effective than non-tailored communication, this is also a relevant characteristic of high-quality health education (Noar et al., 2007). Therefore, in this study tailoring of the BCTs according to the individual needs of the mothers is examined too. However, it is noted that for high-quality and effective health education there are also factors other than tailoring and behavior change techniques that are relevant such as communication (Cropley, 2004). Therefore general communication style is considered in this study and is explained in the following section.

2.4 General communication style for effective health education

Health education has been studied to bring about changes in health behaviors of the patients (Clark et al., 1986, Clemens and Stanton, 1987, Norton, 1998, de Bruin et al., 2010). Nevertheless, provider-patient communication have been found to impact the health behaviors, for example adherence to treatment (Bultman and Svarstad, 2000, Schoenthaler et al., 2009). Patient-centered behaviors of the provider for example, encouraging patient involvement, offering support, and respecting the opinions of patients have all been seen to

facilitate active involvement of the patient during consultation thereby leading to the change in health behavior (Street Jr et al., 1993). Among other findings related to parent-provider interaction, too much information or to little information by the provider can be a potential source of conflict in relationship between the parents and the provider, for example this was seen by Moore and Kordick, (2006) in cases involving parents and children with cancer. Buford (2005), for example concluded that listening to parents, validating their perspectives, providing comfort, and being attentive to them makes the parents feels supported. Wanzer and colleague (2004) reaffirms that listening and being close with the parents during the interaction strongly relates to strong parent satisfaction. Hence, besides the technical content of communication (BCTs), the manner of interacting seems important for high quality health education. An important aspect is, thus, a patient–centered communication style (Hall et al., 1988). One of the characteristics of a patient centered care, besides the communication style already mentioned, is shared-decision making. Shared-decision making helps patient to play an active role in making decisions concerning their treatment and is defined as the decision making process carried out jointly by the patients and the health care provider(Briss et al., 2004). This has been shown to lead to higher levels of patient satisfaction and adherence to the treatment provided (Wilson et al., 2010).

Empathizing by the care provider is another widely accepted character that is seen as the desirable quality and instrumental in bringing changes in the patient's positive health outcomes. According to Rogers (1975) empathy is an ability to communicate a sensing of the client's feelings as though they are the provider's own but without becoming bound up by them and losing a sense of self. Reynolds and Scott (2000) defines empathy as "the ability to perceive and reason, as well as the ability to communicate understanding of the other person's feelings and their attached meanings, is held to be core characteristics of a helping relationship." According to Coulehan (2001) empathy constitute of three components: cognitive, affective and action. The first component of empathy being the cognitive is more to do with the intellect where the provider observes the verbal and non-verbal communication and places the message in context. The affective component is the emotional focus. It is the provider's ability to put herself in patient's place and the skills to convey the emotional understanding is the main

character of this component. Showing empathy acknowledges the other party for their individuality and uniqueness. For example, statements such as "I want to be sure that I understand what you mean" or "Let me see if I have this right" was used as the guide to understand the empathy. Showing empathy during the care has been linked to reduced anxiety, better emotional adjustments to the illnesses and renewing hope and meanings during those phases and thus patient satisfaction and adherence to treatments (Kirk, 2007, Reynolds and Scott, 2000).

2.5 So what constitutes high-quality health education?

In order for a patient to change their behaviors, their intentions to perform the behavior should be high, the behavior should be well planned and should fit into patients' daily life, and barriers must be removed and the behavior facilitated where possible. The behavior intention is highly influenced by knowledge, attitudes, social norms and perceived behavioral control. All these determinants can be targeted by the behavior change techniques, which can facilitate the change in behavior. Use of behavior change techniques alone may not induce behavior change if other conditions of high quality health education are ignored. Many studies have found that the communication style (i.e., patient-centered, empathetic) plays an important role changing the behavior (Reynolds and Scott, 2000 Coulehan, 2001, Wanzer et al., 2004, Kirk, 2007). Thus, high quality of health education in this study is described as when the nurses use multiple BCTs to address the various relevant behavior determinants with an empathetic, patient-centered communication style. This is displayed in Figure 2 with the boxes behavior change techniques, general communication style and individual determinants.

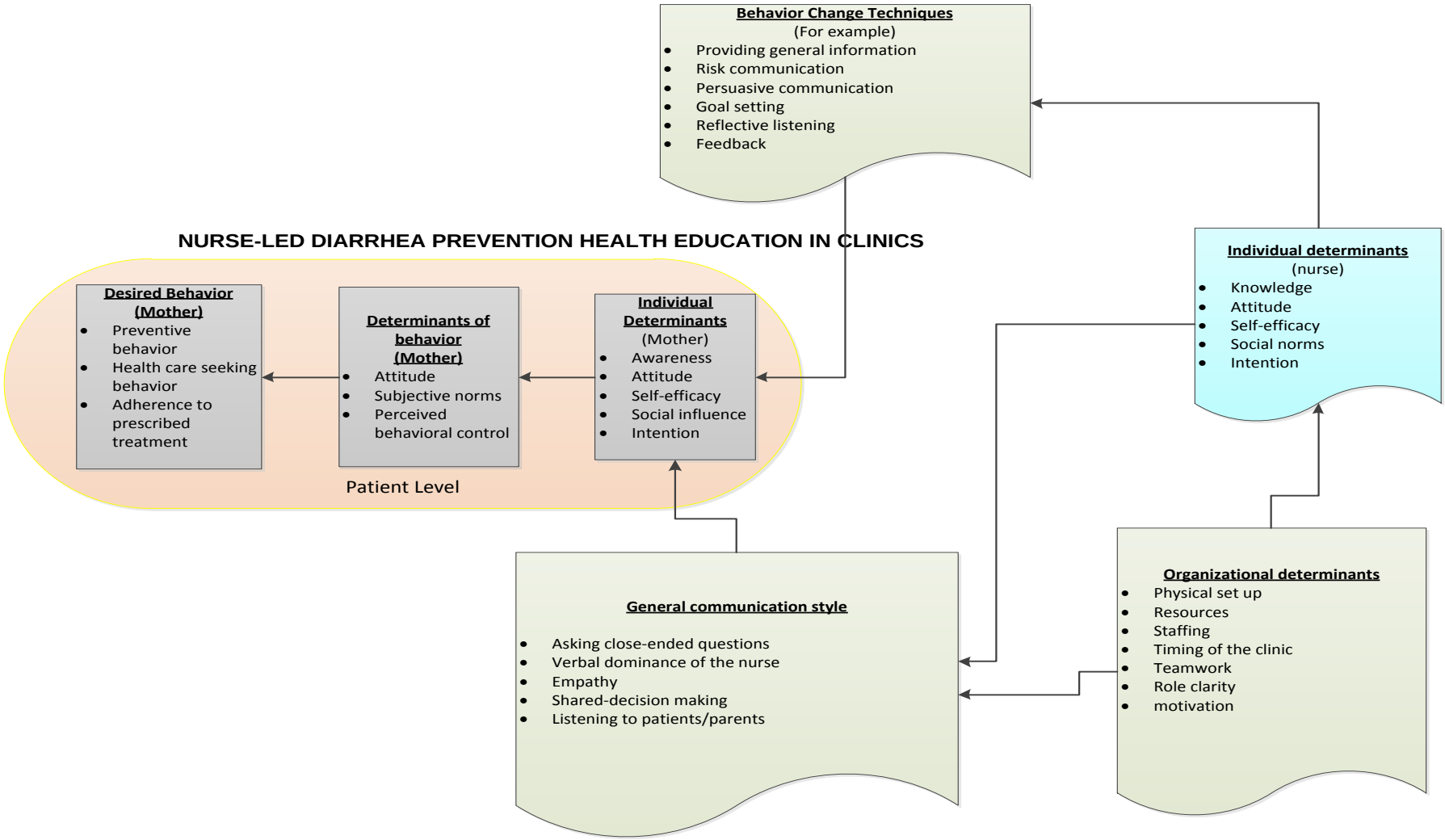
2.5.1 Determinants of high-quality health education

Facilitating the modification of harmful health-related behaviors in clients at risk of illness may seem a relatively straightforward activity. However, the quality of health education can vary between clinics and nurses due to differences in their own individual backgrounds (e.g., knowledge, attitude, skills relevant for high-quality health education) or differences between clinics characteristics. Regarding organizational level factors, McSherry and Haddock (1999) and Johnston and colleagues (2002) in their research have demonstrated that the factors

like teamwork, organizational norms (policies), and resources can affect the quality of care delivered by nurses. Moreover, the quality of care received by patients has been found to be higher in hospitals with adequate staffing, a high level of staff education, professional skills, support from the organization and management, and good communication between the nursing staff and physicians (Aiken et al., 2002, Adams and Bond, 2000). Attree (2001) in his finding of the study also reported that the number of staff available affected the care delivered; minimum staffing levels negatively affected the delivery of the quality of care, which is also resonated by Sochalski (2001). Lamiani and Furey (2009) noted that providing training for the nurses on patient education based on patient-centered model not only increased the knowledge of the nurses but also had an implication on the delivery of effective patient education. Furthermore, Naimoli et al., (1995) also suggest that that providing in-service trainings integrating clinical and communication skills can improve the quality of health education provided to the patients.

Apart from the organizational determinants, individual nurse-level determinants are seen to have influence on the care deliverance by health care professionals. Rodwell (1996) found that nurses who are exposed to a body of knowledge are in a position to deliver an effective and efficient standard of care and the quality of care was directly linked to the use of knowledge. More knowledge resulted in better care delivery. Background factors of individuals like educational background, trainings can influence the health education provided by the nurses to the clients. Therefore, it can be noted that the factors (both individual and organizational) can influence the quality of care delivered by the health personnel. Adding these elements to Figure 2, and assuming the same type of individual behavior determinants for the quality of health education by the nurses as used for patient behavior (i.e., based on the theory of planned behavior), the boxes with Individual determinants nurse and Organizational determinants complement the theoretical framework for this study

Figure 2: Logical framework for the study



2.6 Specific research questions

This theoretical framework helps to formulate more specific research questions for this thesis. Hence, to be able to answer the main research questions the following specific questions are formulated:

1. What are the behaviors addressed by the nurses during the health education in the clinics for diarrhea prevention?
2. What are the behavior change techniques used by the nurses during the interaction?
3. What general communication style do the nurses use during the interaction?
4. Overall, what quality of health education do the nurses in diarrhea clinics in Bhutan provide?
5. What are individual determinants of the nurse that influence the quality of health education provided?
6. What are organizational determinants that influence the quality of the health education delivered by the nurses?

Finding answers to the above specific research questions may help to improve the quality of health education in clinical settings and thereby improve diarrhea prevention, early health care seeking and adherence to treatment among the high-risk under-five children in Bhutan.

Chapter 3

3 Methodology

3.1 Study site

Bhutan is a small Himalayan country located in Asia with India and China as the neighboring country to the south and the north respectively. The total are of the country is 14,824 sq kilometers and the population is estimated at 0.70 million by Asian Development Bank (April 2011). Bhutan is divided into 20 dzongkhags (administrative district). This study was carried out in Thimphu district, the capital of Bhutan. Thimphu has nine gewogs (administrative block) with population estimate of 104,214 and thirteen health care centers consisting of the only national referral hospital, general hospital, satellite clinics and basic health units (National Statistics Bureau, 2010). The reasons for choosing the capital as the study setting were firstly: the availability of different health clinics, ranging from the only national referral hospital to the basic health units. Second being the limited time the researcher had for the data collection and the lack of financial support for the study.

The clinics were chosen conveniently. The aim was to select only five health clinics randomly out of 13 total health clinics and interview at least two nurses from each clinic. Out of 13 clinics, two of the clinics were located two days walk from the nearest road point; two other hospitals informed me that they did not have any nurses working in outpatient department; one of the clinics was closed due to shifting to another location; and one clinic was exclusively for reproductive health cases. The remaining seven clinics were included for the study, so that the desired number of sample is reached. The selected health clinics consisted of hospitals, BHU and satellite clinics (clinics that serves as the gatekeeper for the national referral hospital).

3.2 Study design and sampling

The study design was cross-sectional observational design using qualitative research methods. An observational study design was chosen because observational studies of the clinical interaction from patient/caregiver and health care provider offer insight into the importance of the interpersonal dynamics in the quality and the content of the health education given.

Purposive samples of registered nurses irrespective of age, sex, educational background, social economic status or years of experience were included in the study. Nurse (n=10) were interviewed from seven health clinics. Managers from each clinic were also approached (n=7). However, two of the managers refused to participate in the study because of a holiday and due to some personal issues. Thus, the actual sample of manager was n=five and the nurses n=10. All the participants were recruited voluntarily and interviews were carried out after they read the participation information and then signed the informed consent for the study.

3.3 Data collection tools and techniques

Data collection for the study was done over two months in Thimphu, Bhutan. The data collection tools used was nurse observation and in-depth interviews with both nurses and managers. Participant observation was employed to observe and record the nurse-patient interaction. A small digital audio recorder was used during the nurse-patient interaction to record the health education session in the clinics. Hand written notes were made regarding observations of the physical set up of the clinics, available resources and facilities in the clinic. A semi-structured questionnaire with probes was prepared and used as a guide for the interview.

3.4 Operationalization of the concepts

This section details the measures of variable for this study.

3.4.1 Content of the health education

The content of the health education given by the nurses was measured in-terms of the three health behaviors recognized through the literature search. Through literature reviews, it is affirmed that the behavior exhibits like practicing preventive methods for further occurrence of diarrhea, health-seeking behaviors (being able to recognize danger signs) and adhering to treatments provided will reduce the morbidity and mortality of diarrhea among under-five in developing countries. For example, questions like what do you feel a good health education must include. Why do you think those components must be included? What standard care they follow during the management of diarrheal cases among the under-five in the clinics? These behavioral aspects were observed during the interaction and were coded during the

transcription of the nurse-patient interaction. The data set used for this purpose is the interview of the nurses and the nurse-patient interaction.

3.4.2 Behavior change techniques (BCTs)

Use of the BCTs is considered important as BCTs modifies the behavioral determinates leading to intention formation and finally change of behaviors. The taxonomy of the behavior change techniques adapted by de Bruin et al. (2009) was used in this study. It was modified to fit the context of the diarrheal disease prevention and health education given during the patient visits in the clinics. The data set used for this purpose is the nurse-patient interaction. The taxonomy of the behavior change techniques used in this study please see appendix 1

3.4.3 General communication style

In this study, the general communication style is looked into from two perspectives. The provider-centered style and patient centered style. *Provider's communication styles* were measured by if the nurses asked closed-ended or open-ended questions, or if the nurses purely gave information and instructions based on the diseases. It is also being noted if the nurses gave an opportunity for the patients to speak and how much time did each nurses spend on each of the patients. *Empathizing* in this study was measured through the statements of nurse such as "I want to be sure that I understand what you mean" or "Let me see if I have this right". Furthermore efforts are made to examine if the nurses used any words of comforts like "do not worry, I understand you what you must be going through." S*hared-decision making* was measured through the opportunity given to the parents to decide for example opting to use hospital ORS or commercial ORS, willingness to take antibiotics. The other aspect that was measured was whether the parents were asked for their views and if they were actively involved during the care

3.4.4 Individual and organizational determinants

Individual nurse determinants like knowledge, attitude, self-efficacy, perceived social norms and intention to perform the health education were explored in this study to see their content and the variability amongst the nurses. The data used for the coding of the determinants for the nurse is the combination of the in-depth interview with the nurses and

the nurse-patient interaction, while for the organizational determinants the data set used was the combination of the in-depth interviews with the nurses and the managers of the clinics. The knowledge of the nurses in this study is determined through the in-depth interviews with the nurses and from the nurse-patient interaction (See Appendix 2 for the interview schedule). Knowledge of the nurses with regard to giving of health education was coded based on the behaviors that the nurses addressed which also corresponds to the guidelines for the management of the diarrheal cases published by the WHO. Knowledge about the preventive behaviors like maintenance of hygiene and sanitation, hand-washing with soap, proper use of toilets, boiling water before consuming or encouraging breast-feeding, and immunizations are few examples which are noted if they are addressed or not during the health education. Knowledge aspect is also coded based on whether nurses give mothers information on danger signs during diarrhea and whether mothers were told to bring the child for follow up, and when to bring them. ORS usage and clear instructions given, prescribing of zinc pills and antibiotics are for example coded for knowledge. Reported feelings and views on health education by the nurses is considered for the determinant attitude. For example, nurses' view on health education as highly important, not important or indifferent are coded for attitude.

Self-efficacy was coded based on nurses expressing confidence in giving health education and the support they receive to carry out the health education. Social norm was measured as the expectation nurses' feel from her colleagues and significant others with regard to giving health education. Finally intention questions like "do you think that you will be giving health education and why" were asked and the intention was accordingly coded for. It was coded as having positive or negative intention. Therefore, in-depth interviews were done with the nurses to determine their knowledge, attitude, subjective norms and perceived behavioral control and intention regarding the delivery of (high quality) health education.

Factors other than individual determinants of the nurses that influence the health education are the organizational determinants. The *organizational determinants* were determined by interviewing the immediate managers of the health centers. The researcher maintained field notes during the clinical visits. Factors such as organizational norms (autonomy, trainings, teamwork, job responsibilities and guidelines for the care), type of health

care center (well-equipped hospital, BHU, having of separate room) and availability of resources were considered as the organizational determinants. The managers were for example, asked the questions targeting priority to patient education: What are the services provided by your clinic and what do you feel about patient education? For the organizational norms for example it was asked what kind of incentives are given to the nurses for their job. They were also asked as to what kind of job description nurses has (in written), whether they have set and written guidelines for each disease. In addition, for the resources available they were asked as to what they feel is the need in the clinic so that they can give better care and health education. The interview guide for the managers is included in Appendix 3.

3.5 Data analysis

The information collected from the participant observation and in-depth interviews with nurses and managers was systematically analysed to for the content of the health education, use of behaviour change techniques, the general communication style, nurse-level determinants and organizational characteristics. At first, the recordings were transcribed and the researcher read all the transcripts several times. The data collected were in local dialects and had to be translated to English, which was done by the researcher. The guidelines for the data collection for the interview and participant observation was developed focusing on different topic list on the determinants at both the individual level of the nurse and the organization level, and the use of taxonomy of the behaviour change. Thus, the data was coded into respective topic-list by top-down approach. Any repetitive themes from interviews are taken into consideration. In order to determine the quality of health education given the context like health behaviours addressed, behaviour change techniques used (determinants addressed) and general communication style used are converted into percentages out of 100, nurse-wise and clinic-wise. The description of the findings on topic lists with key illustrative verbatim narratives is presented in this report.

3.6 Ethical consideration

Given the fact that the study involved human participants and observation of the nurse-patient interactions in the health care settings, ethical approval was sought prior to data

collection. The proposal together with other relevant documents like informed consent form in English and official language (Dzongkha) was made available to the Research ethic board of health (REBH), Ministry of health (MOH), Bhutan for approval of the study in the designated health care facilities. Informed consent of patients was secured through informed consent form. Each participant in the study was asked to read the participant consent form and participant information. Individual participant were then asked to sign the form in the acceptance to take part in the research. The participation in the study was voluntary.

3.7 Validity and reliability

The interview guides were translated into local dialects by getting approval from the Ministry of Health of Bhutan. The in-depth interviews with the nurses were carried out after the participant observation was done in order to reduce the reporting bias by the nurses and have a carry-over effect of the interview in the observation. Expert opinions were taken from time to time as per the need of the research process.

Chapter 4

4 Results

This chapter presents the qualitative results of the study. It first addresses the descriptive characteristics of the study participant. Following this, the qualitative data analysis is presented. The analyzed data is presented in different section and sub-sections. Those sections present the results on content of health education given by the nurses, the behavior change techniques used in health education, conditions favorable for adoption of desired health behaviors by mother or parents of the sick child, and finally individual and organizational determinants involved in giving good health education by the nurses.

4.1 Descriptive characteristics of the study sample

This section presents the socio-demographic characteristics of the study sample. Ten nurses were selected as the study sample to represent the nurses. The nurses were aged between 32 to 44 years old. Based on interviews with the nurses their years in service ranged from 13 to 17 years under the ministry of health and from 8 months to 12 years in the current clinic. Out of ten nurses interviewed, nine were female nurses and one male nurse. The educational background of nurses ranged from assistant nurse (two years certificate in nursing and are usually posted in the ward-indoor to assist the nurses), auxiliary nurse midwife (two year certificate course and are usually posted in BHUs) and general nurse midwife (three year diploma certificate in nursing). Five out of ten nurses were assistant nurse, while four of them were auxiliary nurse midwife and only one nurse interviewed was general nurse midwife.

Five managers of the selected clinics were interviewed during this study. Their age ranged from 36 to 42 years. Three of the managers were male and two were female. Total number of years of service under ministry of health was from 7 years to 23 years, while the length of service in the current clinic as an in-charge were from 1 year to 10 years. The educational background of the managers was health assistant (two years certificate course), assistant nurse and a pharmacist. Three were health assistant, one an assistant nurse and a pharmacist.

Table 1: Descriptive characteristics of the study sample

Sl.no	Nurse	Age/sex	Qualification	Clinic	Religion	Number of years in current clinic	Number of years in service (MoH)	Marital status	NPI
1	NR-1	32 years /F	AN	C1	B	3 years	13 years	D	5
2	NR2	34 years /F	AN	C2	B	8months	14 years	M	5
3	NR3	38 years /M	ANM	C3	B	3 years	15 years	M	4
4	NR4	40 years /F	AN	C4	B	10 years	23 years	M	5
5	NR5	38 years /F	GNM	C4	H	1 year	14 years	M	4
6	NR6	44 years /F	ANM	C5	H	6 years	27 years	M	4
7	NR7	37 years /F	ANM	C6	B	1 year	8 years	M	4
8	NR8	40 years /F	AN	C6	B	5 years	22 years	M	3
9	NR9	42 years /F	AN	C7	B	12 years	18 years	M	4
10	NR10	37 years /F	ANM	C7	B	6 years	14 years	M	4
Managers									
1	MR1	36 years /F	HA	C1	B	1 year	7 years	M	
2	MR2	42 years /M	Pharmacist	C6	B	4 years	16 years	M	
3	MR3	40 years /F	AN	C4	B	10 years	23 years	M	
4	MR4	39 years /M	HA	C2	B	5 years	17 years	M	
5	MR5	41 years /M	HA	C3	B	10 years	20 years	M	

NR-Nurse Respondent; AN-Assistant Nurse; ANM- Auxiliary Nurse Midwife; GNM: General Nurse Midwife; HA- Health Assistant; MR-manager respondent; C-Clinics; B-Buddhism; H-Hindu; D-Divorced; M- Married; NPI-Nurse-patient interaction observed per nurse

4.2. What health education is given by the nurses?

This section presents the results on what health education is given by the nurses in the clinics. This section is further divided into sub-sections so that the research question can be answered systematically. The sub-section 4.2.1 focuses on the content level of the health education. It presents qualitative data on the health behaviors that are observed during the interaction and reported by the nurses during the interview. Sub-section, 4.2.2 presents the results on behavior change techniques (BCTs) used by the nurses during the health education. Whereas, 4.2.3 presents the data on the general communication used during the health education, both observed and reported communication style. Then overall comparison between the observed and the reported health behaviors is presented. Following the comparison of the observed and reported health behavior at content level the quality of health education provided by the nurses is presented according to the study framework in sub-section 4.2.4.

4.2.1. Health behaviors addressed by the nurses

This section reports the results on health behaviors addressed by the nurses during the health education. The expected health behaviors to be addressed are the preventive behavior, health care seeking behavior and adherence to the provided treatment for diarrhea. The results are reported under two categories, a) behaviors addressed during the interaction and b) behaviors that nurses' claim that they address (subjective reporting of the behavior). At the end of this section, each behavior addressed by the nurses during interaction and in in-depth interview is presented in table and patterns at nurse level is reported.

a) Health behaviors addressed during nurse-patient interaction

In this section, results are presented on the behaviors addressed by the nurses during the interactions. The data sets used for this purpose were the nurse-patient interaction, the in-depth interview with the nurses and field notes maintained by the researcher. Four interactions were observed for each nurse on average. Total interaction observed for ten nurses thus was 42. In general, it is observed that all the ten nurses addressed all the health behaviors. However, the behaviors addressed differed between the nurses and within the interactions

observed for each nurses. During some interactions, nurses addressed either preventive behaviors or health care seeking and treatment adherence, while during some interactions the preventive behaviors were completely ignored. For example, nurse respondent 10 addressed preventive behavior in interaction1 observed for her as,*"…maintain cleanliness at home and drink only boiled water and keep the baby clean too"*. While in interaction 2 she said, *"… always give boiled and cooled water and also wash the cup and spoon thoroughly with soap and water before and after the fee. Keep the surroundings clean and baby clean. Also wash your hands before feeding and after feeding the child".* It is observed that nurse respondent 10 addressed the preventive health behaviors in all the four interactions observed for her. Likewise, nurse respondent 9 too addressed the preventive behavior. For example, in interaction 3 observed for her she said, *"..so you need to maintain hygiene of the toilets too and wash your hands thoroughly after use of toilets and also wash child hands before and after food".* While, nurse respondent 6, did not mention the preventive behaviors in all the four interactions observed for her. Whereas, it is observed that nurse respondent 4, for whom five interactions were observed addressed this behavior only in two of the interactions. Thus, from the interactions observed it can be deduced that addressing of the preventive behaviors differed amongst the nurses and within the interactions observed for each nurses.

Addressing the health care seeking behaviors, nurse respondent 9 in interaction 1 observed for her said, *"Sometime when child pass stool more than may be 10-11 times and is unable to feed or has dried lips, develops fever then it is a problem. He should be fine and if he is not getting alright and starts vomiting and not feeding well then you need to bring him back to the clinic".* While in interaction 3 she said, *"..if your child is not feeling better or having fever or have traces of blood or mucous in the stool you need to bring the child to the clinic*". Whereas, nurse respondent5 during interaction 3 *said, "if your child refuse to eat, drink and there is increase in diarrheal episodes, bring back the child tomorrow or take the child to any health center nearby".* Seven out of ten nurses informed about when to take the child to a health clinic in all the interactions observed for them, while three of the remaining nurses failed to do so.

Whereas, addressing the treatment adherence behavior nurse respondent9 during the

interaction1 observed for her said, *"..there is no need for any medicine but you can take a packet of ORS and if the child continues to have diarrhea then prepare the ORS in one liter of water and feed the child as much as he can drink".* On the other hand nurse respondent 10 during interaction 3 said, "*you need to keep him feeding and try cooking rice with vegetables and make it like porridge and feed him…We will give you two packets of ORS and you need to prepare it and feed the child as much as possible…. Yes, mix one packet of ORS in one liter of water and use the mixture for 24 hours and after that discard and prepare the new one. In addition, after every stool feed the child with ORS around at least half a cup and feed him on demand. ORS should improve the child and it also reduces the vomiting and diarrhea if you continue feeding him".* Six out of ten nurses gave information on how to prepare ORS, how much to give to child and for how long the ORS must be stored after preparation in all the interactions observed for them. Whereas, four out of ten nurses did not mention this behavior in all the interactions observed for them.

Thus, from the interactions observed for the nurses, it is seen that the nurses are aware of the health behaviors for the prevention of diarrheal diseases. However, the health behaviors are not addressed consistently throughout the interactions with the mothers during their clinical visits. It is found that only two nurses addressed all the three health behaviors in all the interactions observed for them, namely nurse respondents 9 and 10. Those two nurses who addressed all the health behaviors were from the same clinic, which had the maximum number of health staff, total of five. These nurses had the qualification as an assistant nurse and auxiliary nurse midwife. Both have been working over 10 years as a nurse. The behavior addressed by the nurses is converted into percentage out of 100. If a nurse scores 100 percent then it is considered that al the health behaviors are addressed. Thus percentage-wise nurse respondent 9 and 10 addressed 100% of expected health behaviors, which means that these two nurses addressed all the health behaviors during the interactions. Using nurse respondents 9 and 10 as a benchmark, nurse respondent 8 addressed 89% of the behaviors during the interactions observed for her. Nurse respondent 5 scored the least, which was 58% when it came to addressing of all the health behaviors during the interactions. Amongst the ten nurses, interviewed nurse respondent 5 was the only one who was more qualified. Therefore,

qualification level does not seem to make any difference while addressing the health behaviors. On the whole behavior wise it is observed that nurses addressed preventive behavior 22 times out of 42 interactions (52%), health care seeking behavior 39 times out of 42 interactions (93%) and treatment adherence 37 times out of 42 interactions (88%). Thus, bringing the total of behaviors addressed by the ten nurses in all the interactions to 76 percent out of 100. From the quotes and the percentages, it is concluded that the behaviors addressed during the interaction differed amongst the nurses and within the interactions for each nurses.

The summary of the behaviors addressed by the nurses in the interactions for each nurses are shown in the table 2 below.

Table 2: Behaviors addressed during the interaction

Nurse respondent			NR1	NR2	NR3	NR4	NR5	NR6	NR7	NR8	NR9	NR10	Total
Number of observed interactions			5	5	4	5	4	4	4	3	4	4	
Behaviors addressed	Preventive behavior	Expected	5	5	4	5	4	4	4	3	4	4	100%
		Observed	3	3	1	2	1	0	2	2	4	4	52%
	Health care seeking	Expected	5	5	4	5	4	4	4	3	4	4	100%
		Observed	4	5	4	4	3	4	4	3	4	4	93%
	Treatment adherence	Expected	5	5	4	5	4	4	4	3	4	4	100%
		Observed	3	5	4	4	3	4	3	3	4	4	88%
	Total	Expected	15	15	12	15	12	12	12	9	12	12	100%
		Observed	10	13	9	10	7	8	9	8	12	12	76%
Percentage of behavior addressed (100%)			67%	87%	75%	67%	58%	67%	75%	89%	100%	100%	

NR-Nurse respondent

b) Behaviors reported important by the nurses during interview

This section focuses on the health behaviors, which are preventive behaviors, health care seeking and adherence to the treatment, which the nurses claim that they address during their encounter with mothers in the clinic. The data set used was the in-depth interview with the nurses. At the end of this section, a relationship is established between the observed and the reported behaviors for the diarrheal prevention. When the nurses were asked about what health education is given during the interactions it was reported all the health behaviors are addressed. For example, nurse respondent1 said, *"I tell them that washing hands with soap is very important especially before and after eating food, after using toilet and the importance of maintaining cleanliness around their home…When the patients with diarrhea come to our clinic we give them the ORS for the non-infective and for the infective ones we give antibiotics too. I tell them when they can bring back their child for example when the child refuses to eat or drink anything, there is increase in the frequency of the diarrhea, child is having fever or is having blood or mucous in the stool"*. While nurse respondent2 said, *"..in diarrhea we mainly advise them to maintain hygiene and sanitation, drink boiled water, to use proper toilets for defecation, wash hands before and after eating food, wash all the vegetables and fruits before eating them, cover the food well and keep house clean. …And if the child is already suffering we advise them together with above that they need to give the ORS and also how important it is to continue child feeding with food that are more of liquid kind like soup, porridge, weak tea, and if the child is still breastfeeding then to continue feeding the child as much as possible… if their child is having more frequency of diarrhea or vomits or is unable to eat anything then to bring the child back to the clinic".* Nurse respondent4 reported, "*In diarrheal cases we give health education on mainly hygiene and sanitation, as to how they can keep their home clean, drink boiled water, washing hands before and after feeding the child. I tell them to give plenty of fluids at home, which is the most important one. I also make sure that they know how to prepare the ORS. It is important because then it can prevent further complications and repeated problems of admission or visit to the hospital. Many mothers complain that their child refuses to drink or vomit the ORS dispensed from hospital, in such cases they are advised to buy the commercial ones which are flavored ….mango flavor, orange flavor.. and child is happy drinking*

them. Or home remedies like home fluids, soup, weak tea, porridge etc. I tell them about the danger signs which they must be aware of …we tell them to bring back the child when the child shows signs of dehydration like umh….eh… child drinking very poorly, sunken eyes, then there is less urination and when child is very lethargic".

These quotes suggest that all the ten nurses who were interviewed had knowledge and were well aware of the importance of health behaviors to be addressed during the health education. However, major discrepancy was observed between the behaviors addressed during the interactions and the behaviors the nurses' claim that they address when interviewed. The nature of these discrepancies is that all nurses claim to emphasize all three desired health behaviors for the diarrheal prevention every time. In addition, the nurses said that they give very detailed health education to the parents whose children are suffering from diarrhea. However, during the interaction it was observed that the majority of nurses did not systematically address all three behaviors, and in particular the preventive measures, and that the level of detail of discussing a behavior when it was addressed was considerably less than what nurses said during the interviews.

4.2.2 Behavior Change Techniques (BCTs) used

In this section, the results on the behavior change techniques used by the nurses for the behavior change is presented. The data source used was the nurse patient interactions. The taxonomy of behavior change techniques (BCTs) was used as a guide for coding for the techniques employed by each nurses for the interactions observed. Out of 38 BCTs, the nurses used only five techniques explicitly during the interactions with parents. The most commonly used behavior change techniques during the interactions was found to be, 'providing general information' (see table 3 for the detailed coding of the BCTs). This technique targets the knowledge determinants of the mother. All the ten nurses used this technique. The second most commonly used technique was the risk communication that targets the awareness determinants of the mothers. Six nurses used this technique during the interactions with the mothers. Aiming the social norm determinants, the technique norm important to other was used by only one nurse. One nurse helped mother to make ORS, which was aimed at self-efficacy of the mother, while the other nurse developed medication schedule, thus targeting

the intention of the mother during the interaction.

For example, the BCTs used by nurse respondent-5 during interaction 2 observed was providing general information which was individualized, *"…child has been having diarrhea for last 2 days….mild dehydration, irritable and refusing to eat….and have not passed urine since morning… because of the diarrhea child tend to lose much of water from body in stool that is when the child starts being irritable".* While she did use the risk communication twice during the four interactions observed for her, she also used the norm important other and guided practice during the interaction with the mother. For example, the risk communication was used in the following manner by the nurse respondent5 in interaction4, *"….if hands are not washed and cleanliness not maintained with the utensils they can lead to child having diarrhea. So it is important to wash your hands and keep your house clean and make proper use of toilets otherwise you your child will keep on getting diarrhea in future too*". While the norm important other was referred to the treating physician, *"You need to take the ORS and the medicine prescribed by the doctor as they are very important to make your child better. It is important to follow the doctor's advices"* during fourth interaction observed. Targeting the self-efficacy the nurse respondent5 showed the mother how she could prepare ORS and in what kind of container she could prepare and how much the mother could give to the child during interaction 4, "*See you need to feed your child with this ORS as often as you can and whenever child passes the stool. Wash your hands after handling the napkin…there is the washbasin wash your hands there. Do you see this one liter of bottle here….see…you need to pour boiled cooled water until this mark here and then add the whole one ORS packet in this water and shake it well and feed the child as much as the child can drink. Otherwise see, when you feed child you at least try to feed the child this much of ORS in water after every episode of diarrhea..".* Other than the providing the general information and using risk communication behavior change technique, the nurse respondent3 developed the medication intake schedule for the mother so that the medication prescribed can be taken in appropriate time. This is evident from this quote, *"we will give her medicine. We will give one for the fever and one for the appetite. This white medicine here is for the fever. Give her half the tablet whenever she has the fever and this yellow one is the vitamin B, which also needs to be given half the tablet but only once a day.*

Here this half circle on the packet means that you use half of the tablet" from fourth interaction observed for nurse respondent 3.

The BCTs used by the nurses when coded (see table 3 for detailed coding) it is observed that out of 38 BCTs, the highest number of BCTs used was four, used by nurse respondent 5. She was the only nurse who was highly educated (GNM) amongst the ten nurses who were interviewed and had the degree of general nurse midwife. Following nurse respondent5, the highest used BCTs was three, which was used by nurse respondent 3. Four of the nurses used two behavior change techniques in the interactions observed for them while rest four of them used only one BCT. Those nurses who used less than four BCTs were auxiliary nurse midwives and assistant nurses. The BCTs are used to target the individual determinants of the mothers so that behavioral determinants are influenced and thus behavior is modified. From the taxonomy of the behavior change techniques in table 3 above it can be seen that the nurses do target some determinants. Overall, the determinants targeted are knowledge and awareness, motivational determinants like attitude, self-efficacy and social norms, and intention. Action control, maintenance of the behavior and facilitation of the behavior were not used at all. Considering the BCTs used percentage is drawn on total determinants targeted by the used BCTs for each nurses, keeping in mind the number of interactions observed too (see table 4). Ideally, 38 BCTs is to be coded from single interaction. As such, if five interactions are observed for a nurse then ideally 190 BCTs in total should be coded. Similarly, for four interactions observed, 152 BCTs should be coded and for three interactions in total 114 BCTs needs to be coded. Therefore, when the total BCTs used by the nurses were converted into percentage from its ideal scoring, it was observed that the maximum behavioral determinants were target by nurse respondent 3. For nurse respondent 3 out of 152 BCTs, only 6 BCTs was coded from four interactions observed for her, thus scoring her 4% out of 100%.

The quotes and the BCTs used suggests, although the nurses have knowledge and awareness of the health behaviors to be addressed, they use very less behavior change techniques. Thus, the behavioral determinants targeted are very low, ranging from one to four% out of 100%. However, it could be influenced by individual determinants of the nurses like knowledge, motivation or intention or the organizational determinants to give health

education. These determinants are presented in the next sections. Nevertheless, it is been studied that the information given by the provider for the change of behaviors are influenced by the general communication style between the provider and the receiver for example provider-communication style, or patient centered care. Thus, the next section presents the results on general communication during the interaction and subjective reporting of the communication style by the nurses.

Table 3: Taxonomy of Behavior change techniques used

Determinant		Technique (BCT)	NR1	NR2	NR3	NR4	NR5	NR6	NR7	NR8	NR9	NR10
Knowledge	1	Provide general information	5/5	4/5	2/5	3/4	4/4	4/4	3/4	1/3	4/4	4/4
		Tailoring	x	x	x	x	x	x	x	x	x	x
		Individualization	5/5	4/5	2/5	3/4	4/4	4/4	3/4	1/3	4/4	4/4
	2	Increase memory & understand.(use of audio-visual aids)	x	x	x	x	x	x	x	x	x	x
Awareness	3	Risk communication	x	1/5	1/5	2/4	2/4	x	x	1/3	x	3/4
		Tailoring										
	4	Self-monitoring of behavior	x	x	x	x	x	x	x	x	x	x
	5	Self-report of behavior	x	x	x	x	x	x	x	x	x	x
	6	Electronic monitoring of the behavior (not feasible in this study)										
	7	Reflective listening	x	x	x	x	x	x	x	x	x	x
	8	Delayed feedback of behavior	x	x	x	x	x	x	x	x	x	x
		Objectively measured										
		Subjectively measured										
	9	Direct feedback of behavior	x	x	x	x	x	x	x	x	x	x
	10	Feedback of clinical outcomes	x	x	x	x	x	x	x	x	x	x
Social influence	11	Provide info peer behavior	x	x	x	x	x	x	x	x	x	x
	12	Social comparison peers	x	x	x	x	x	x	x	x	x	x
	13	Norm important other	x	x	x	x	1/5	x	x	x	x	x
Attitude	14	Reevaluation, self-evaluation	x	x	x	x	x	x	x	x	x	x
	15	Persuasive communication	x	x	x	x	x	x	x	x	x	x
		Tailoring										
	16	Reward behavioral progress	x	x	x	x	x	x	x	x	x	x
	17	Reward motivational progress	x	x	x	x	x	x	x	x	x	x
Self-efficacy	18	Modeling	x	x	x	x	x	x	x	x	x	x
	19	Verbal persuasion	x	x	x	x	x	x	x	x	x	x
		Tailoring										
	20	Practice, guided practice	x	x	x	x	1/4	x	x	x	x	x
	21	Plan coping response	x	x	x	x	x	x	x	x	x	x
		Participation										

	22	Graded tasks, goal setting	x	x	x	x	x	x	x	x	x	x
		Participation										
	23	Reattribution, external attribution	x	x	x	x	x	x	x	x	x	x
Intention	24	General intention formation	x	x	x	x	x	x	x	x	x	x
		Participation										
	25	Develop medication schedule	x	x	1/4	x	x	x	x	x	x	x
		Tailoring										
		In writing										
	26	Specific goal setting	x	x	x	x	x	x	x	x	x	x
		Participation										
		In writing										
	27	Review general or specific goals	x	x	x	x	x	x	x	x	x	x
		Participation										
	28	Agree behavioral contract	x	x	x	x	x	x	x	x	x	x
Action control	29	Use of social support	x	x	x	x	x	x	x	x	x	x
	30	Use of cues	x	x	x	x	x	x	x	x	x	x
	31	Self persuasion	x	x	x	x	x	x	x	x	x	x
Maintenance	32	Goals for maintenance	x	x	x	x	x	x	x	x	x	x
		Participation										
	33	*Further prevention of diarrhea	x	x	x	x	x	x	x	x	x	x
		Participation										
Facilitation	34	Provide materials	x	x	x	x	x	x	x	x	x	x
	35	Continuous professional support	x	x	x	x	x	x	x	x	x	x
	36	Individualize regimen	x	x	x	x	x	x	x	x	x	x
	37	Cope with side effects	x	x	x	x	x	x	x	x	x	x
	38	Reduce environmental barriers	x	x	x	x	x	x	x	x	x	x
Total BCT used			1	2	3	2	4	1	1	2	1	2
	Macro tailoring? Yes /No(√)											
		Tailoring number of visits?: Yes / No(√)										
		Format used: Group / Telephone / 1-on-1 counseling (√)										
		If 1-1 or group counseling: who was counselor? The nurses										
		Counselor: Well-trained/ some training/(almost) no training (√) / Do not know										
		Additional materials used (e.g. brochure/other helpful aids): No (√)										

x- Not used

Table 4: Percentage of determinants addressed

Nurse respondent			NR1	NR2	NR3	NR4	NR5	NR6	NR7	NR8	NR9	NR10
Number of observed interactions			5	5	4	5	4	4	4	3	4	4
Ideal BCTs to be coded (38/interaction)			190	190	152	190	152	152	152	114	152	152
Determinants addressed	Knowledge/ Awareness	Observed	5	5	3	5	4	4	3	1	4	4
	Motivation, comprised of attitude, social influence and self-efficacy	Observed	0	0	2	0	0	0	0	0	0	0
	Intention and maintenance	Observed	0	0	1	0	0	0	0	0	0	0
	Action control and facilitation	Observed	0	0	0	0	0	0	0	0	0	0
	Total	Observed	5	5	6	5	4	4	3	1	4	4
Percentage of determinants addressed (100%)			3%	3%	4%	3%	3%	3%	2%	1%	3%	3%

NR-Nurse respondent; AN-Assistant nurse; ANM- Auxiliary nurse midwife; GNM-General nurse midwife

4.2.3 General communication style

This section reports the general communication style used during the delivery of the health education. The data set used for reporting the results was the nurse-patient interaction, field notes and the in-depth interview with the nurses. Results are reported based on patient-centered care like encouraging patient involvement (shared-decision making), respecting the opinions of patients (active listening), and showing empathy to the parents. Apart from these broad concepts, efforts are made to report on the provider-communication style like asking closed-ended questions during the interaction and verbal dominance of the provider. This section is divided into two sub-sections, one observed and the other reported by the nurses as important during the interview.

Observed general communication style

This sub-section reports results on the communication style that is observed in interactions. The data set used for this purpose is the nurse-patient interaction and the field notes. All the ten nurses observed employed closed ended questions to get medical history for the parents. The parents were more of a passive listener than an active participant. For example, nurse respondent1 during interaction 1 asked, *"…..what happened?.... how many times did your child pass stool and is she vomiting too? Is she accepting feedings-breast feeding*?" Nurse respondent9 for example during interaction 2 asked, *"What happened?...Since when and how many times did the child pass stool since morning? Is the amount more and watery? Any blood and mucous in the stool? How old is you child?"* While the nurses extensively used closed ended questions, parents played a very passive role. The conversation was found to be dominated by the nurses rather than having shared-decision making, or shared information based on the disease conditions. Nevertheless, some nurses used some patient-centered communication styles too. For example, all the ten nurses who were observed during the interaction reassured parents of sick child during the interaction. For example, during interaction 3, nurse respondent3 *reassured, "…oh..don't worry it is because she is sick that she must have lost her appetite. In the meantime, you have to continue feeding her. Don't worry but feed her as much as she can eat…."*. The nurses reassured many of the mothers who came to clinic with child suffering from diarrhea. Shared-decision making which enables mothers' to

actively participate in the care of their sick child thereby empowering them to care for their child was found nil during the interaction. None of the nurses asked mothers of their opinions on they feel comfortable and confident enough to prepare ORS or recognize the danger signs in diarrhea. Therefore, shared-decision making is coded to be nil during the interactions. Although, nurses gave verbal reassurance to the mothers' empathy was not explicitly used during the interactions. It is also observed that during the interaction, the nurses talked with their colleague more often than they talked with the mothers. The detailed communication style used during the interaction is presented in table 5.This aspect was most commonly observed in a clinic where all the three health workers shared single room or one table for examining patients. However, when the nurses were asked about the importance of shared-decision making, showing empathy, or carrying out patient-centered communication, all the ten nurses' interviewed reported those condition being highly important and that they use it during the health education. Thus, the following section entails the reported importance of the communication styles during the interaction.

Table 5: General communication style observed during the interaction

Sl.no.	General communication style	NR1 NPI-5	NR2 NPI-5	NR3 NPI-4	NR4 NPI-5	NR5 NPI-4	NR6 NPI-4	NR7 NPI-4	NR8 NPI-3	NR9 NPI-4	NR10 NPI-4
1	Asking close-ended questions	5	5	4	5	4	4	4	3	4	4
2	Verbal dominance of the nurse	5	5	4	5	4	4	4	3	4	4
3	Empathy	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
4	Shared-decision making	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
5	Reassurance	4	5	4	5	4	3	1	2	4	4
6	Touching the patient	3	1	5	4	3	1	2	nil	nil	nil
7	Listening to patients/parents	3	3	1	3	1	2	1	1	3	3

Nil- could not be observed during the interaction and thus was not coded

Subjective reporting of the importance of the communication style

This section reports the subjective reporting of the communication style concepts that the nurses claim that they use during the health education. During the interview, all the nurses recognized shared-decision making and empathy as an important condition when it came to dealing with patients. For example, nurse respondent 8 when asked about the shared-decision making replied, *"….it is important and we cannot force someone to do things that they may not want to…because it will be of no use then…she may not use the ORS..Or she may throw it away."* While, nurse respondent1 reported, *"actively involving patient in their own care is also important. We health workers cannot be with them all the time so they need to learn to take care of themselves. Therefore actively involving them in decision making regarding the care of the child is can make them more confident in future like when child is sick"*. Empathy was another aspect, which was reported as important by the nurses while giving health education. For example, nurse respondent1 reported, *"Well it is very important to understand and be able to put yourself in patient's place. When you are empathetic to patients then they listen to what we say and they trust us."* Nurse respondent2 when asked about empathy she respondent; "*I am a mother and when my child is sick obviously I will be worried and anxious so it is important to understand those mothers who come to seek medical help".* All the nurses reported the importance of reassurance and were equally used during the interactions. For example, nurse respondent2 stated, *"if we reassure them and speak with them in polite manner I think then they will trust us, which makes our interpersonal relationship good."* While nurse respondent6 said, *"I was reassuring her so that she is not worried and feels helpless. I am also a mother and I know the feeling when your child is sick how anxious you can be and how helpless you can feel. It is really challenging when your child is sick because the child is always cranky and you really don't where the child feels the hurt and the child really can't say how he/she is feeling. But if someone reassure you and makes you feel better you get encouragement then."*

From the subjective reporting of the nurses it can be concluded that the nurses are aware of the importance of the communication styles like shared-decision making, showing empathy, reassuring the parents during the interactions. Differences were evident between what is observed and what the nurses are reporting. During the interview, all the ten nurses

expressed the importance shared-decision making, showing empathy and listening to patients and reassuring them. However, not all these expressed important conditions were observed during the interactions. Though, shared-decision making and empathy is found to be nil during the interaction all the nurses however gave simple reassurance to the mothers by saying “don’t worry, your child will be fine”. This pattern was observed in all the ten nurses. While seven nurses also touched the patients to feel the fever, check the skin elasticity to check for dehydration and assist mother in holding the child. All the ten nurses did listen to the mothers during the interactions nevertheless, it was not consistent throughout the interactions.

The communication style based on the observed and reported is formulated in table 6 and is converted into percentage to see how much of total general communication measured is applied by each nurse. Based on the table 6, only two nurses scored 40% and above from the interactions observed for them, namely nurse respondents 9 and 10. Nurse respondent 7 (of 12.25%) was the only nurse who scored the lowest. In general, it is seen that the clinics, which have separate rooms for the nurses, scored higher in the application of general communication style. However, no association was seen between the qualification and use of general communication style unlike in the use of BCTs. Thus, from the observed general communication style and the reporting of the nurses it is deduced that the all the nurses feel that the communication style like shared-decision makings, showing empathy and listening to mothers to be important. A clear gap between what is known and what is practiced and applied is evident.

Table 6: General communication style addressed

Nurse respondent			NR1	NR2	NR3	NR4	NR5	NR6	NR7	NR8	NR9	NR10
Number of observed interactions			5	5	4	5	4	4	4	3	4	4
General communication style	Shared-decision making	Expected	5	5	4	5	4	4	4	3	4	4
		Observed	0	0	0	0	0	0	0	0	0	0
	Empathy	Expected	5	5	4	5	4	4	4	3	4	4
		Observed	0	0	0	0	0	0	0	0	0	0
	Reassurance	Expected	5	5	4	5	4	4	4	3	4	4
		Observed	3	4	4	4	4	3	1	2	4	4
	Listening	Expected	5	5	4	5	4	4	4	3	4	4
		Observed	3	3	1	2	1	2	1	1	3	3
	Total communication style used (Positive scoring)	Expected	20	20	16	20	16	16	16	12	16	16
		Observed	7	7	5	6	5	5	2	3	7	7
Percentage of communication style used (100%)			35%	35%	31%	30%	31%	31.%	12.%	25%	44%	44%

NR-Nurse respondent, percentages are rounded off to the whole number

4.2.4 Quality of health education

This section of the chapter presents the relationship between the three sections for which the findings have been reported, namely health behaviors addressed, BCTs used and the general communication style observed during the health education by the nurse. By establishing the relationship between these three topics, this section seeks to answer the first research question, which is "What are the content and the quality of the health education given by the nurses in diarrheal prevention among the high-risk under-five children who visit the health clinics in Thimphu, Bhutan. The number of health behavior addressed, behavior change techniques used, and the communication style observed is converted into percentage to make the reporting easier. The behavior change techniques used are expressed in terms of the determinants targeted by the techniques used during interactions. In order to report the quality of health education five categories are drawn upon based on the interval distribution of the percentage of 100. The scoring range set up are excellent (80-100%), very good (60-80%), good (40 to 60%), satisfactory (20 to 40%) and poor (0-20%). Taking into consideration the reported results on percentage of health behaviors addressed by the nurses, the percentage of determinants targeted by the used BCTs and the percentage of general communication style observed, each of the components are placed under the five category drawn according to percentage scoring (see table 7). Table 7 suggests that four nurses, namely nurse respondents 2, 8, 9 and 10 were excellent in addressing all the health behaviors. Nurse respondents 1, 3, 4, 6 and 7 were very good at it and nurse respondent5 scored good in addressing the health behaviors during the interactions. Secondly, it is seen that all the ten nurses did poorly in using BCTs, thus in targeting the health behaviors. Finally, the communication style observed during the interaction it is found that the maximum number of nurses scored satisfactory, which is seven out of 10 nurses observed for, while two of the nurses scored good and one nurses scored poor. Therefore, to determine the current quality of health education, combined percentage of these three components (please refer to appendix 4) are taken and then distributed amongst the categories, excellent (80-100%), very good (60-80%), good (40 to 60%), satisfactory (20 to 40%) and poor (0-20%). Table 8, therefore gives the over view of the current health education according to individual nurses.

Table 7: Quality of components for health education

Nurse respondent		NR1	NR2	NR3	NR4	NR5	NR6	NR7	NR8	NR9	NR10	Total	clinics
Behavior addressed	Excellent		√						√	√	v	4	C2,C6,C7
	Very Good	√		√	√		√	V				5	C1,C3,C4,C5,C6
	Good					√						1	C4
	Satisfactory												
	Poor												
Determinants addressed	Excellent												
	Very Good												
	Good												
	Satisfactory												
	Poor	√	√	√	√	√	√	√	√	√	√	10	C1,C2,C3,C4,C5, C6,C7
Communication style	Excellent												
	Very Good												
	Good									√	√	2	C7
	Satisfactory	√	√	√	√	√	√		√			7	C1,C2,C3,C4,C5,C6
	Poor							√				1	C6

NR-Nurse Respondent; C-Clinics; poor-0-20%, satisfactory-20-40%, good-40-60%, very good-60-80% and excellent-80-100%

Table 8: Quality of health education

Nurse respondent	Age/sex	Qualification	Total Years of experience	Clinics	Percentage of the combined components	Poor 0-20%	Satisfactory 20-40%	Good 40-60%	Very good 60-80%	Excellent 80-100%
NR1	32yrs/F	AN	13 years	C1	10	√				
NR2	34yrs/F	AN	14 years	C2	11	√				
NR3	38yrs/M	ANM	15 years	C3	11	√				
NR4	40 yrs/F	AN	23 years	C4	9	√				
NR5	38 yrs/F	GNM	14 years	C4	9	√				
NR6	44 yrs/F	ANM	27 years	C5	9	√				
NR7	37 yrs/F	ANM	8 years	C6	8	√				
NR8	40 yrs/F	AN	22 years	C6	9	√				
NR9	42 yrs/F	AN	18 years	C7	13	√				
NR10	37yrs/F	ANM	14 years	C7	13	√				

NR-Nurse Respondent; AN-Assistant Nurse; ANM- Auxiliary Nurse Midwife; GNM: General Nurse Midwife; C-Clinics; poor-0-20%, satisfactory-20-40%, good-40-60%, very good-60-80% and excellent-80-100%

From table 8, it is noted that all the ten nurses' fall in the category of giving poor quality of health education during the encounter with the mothers in the clinics. Nevertheless, the determinants at individual level such as knowledge/awareness, motivation and intentions cannot be ruled out, which shall be reported in next section. From this, it can also be deduced that the health educations given in the clinics are of poor quality, considering the quality of health education provided by each nurses of the respective clinics. However, the quality of health education in this study is seen to be strongly associated with the BCTs used and the general communication style used during the interactions, which can be influenced by the individual determinants and the organizational determinants. Thus, in next section results on individual determinants and organizational determinants are presented.

4.3 Individual and organizational determinants

This section presents results on the influence of individual and organizational determinants on the present status of the health education. The result is reported under two sub-sections, individual determinants and organizational determinants.

4.3.1 Individual determinants

This section presents the results on individual determinants of the nurses. The data set used for this purpose is the in-depth interview carried out with the nurses. The determinants studied are knowledge/awareness, motivation-social norms, attitude and self-efficacy and intention to give health education.

Through the interviews with the nurses, it is seen that the nurses do have knowledge and awareness with regard to the content of the health education (reported earlier in the observed and reported). Apart from the knowledge for the content of the health education nurses also expressed having knowledge as to how an ideal health education should be. All the 10 nurses expressed that health education should include preventive behaviors, treatment and the awareness of the disease. For example, nurse respondent 3 said, "*…what do you understand by diarrhea.. etc what are the causes, how can we prevent it and what are the treatments for the disease*" should be included in the health education. While nurse respondent 4 reported, "*I feel that health education should include preventive aspect. It is very important because mother can prevent children from becoming sick in future. Even if they become sick they will become well aware of what to do next time…not only in the case of child but also in the case of any one becoming sick in the house…"*. Most of them reported that they give the health education according to the diseases for which the patient comes for treatment. However, when specifically asked about the diarrheal cases that they see, all of them reported that they are aware when and to whom the health education should be given. For example, nurse respondent1 said: *"….because I work with in the police colony they usually share the toilets which are built at a row outside their residential place….thus I know that they need to be given information on how to protect themselves from diseases…".* Nurse respondent 10 too said that, *"well the health education in clinic is more of patient based, individual based, according to*

diseases. We give them information as to why the disease is caused, what can be done, and what can one do to protect oneself from the disease in future. It also depends upon the knowledge of the patients who come to the clinic. These days due to Television show by the doctors people also have become more aware and they know. So when we encounter them they usually know a lot which also is a compliment for us as we don't have to spend much of time on one person." Thus, based on the interview with the nurses it can be seen that the nurses aware of the content and importance of giving diarrheal prevention health education. No significant differences amongst the nurses are seen as all of them reported what a health education should contain and how should it be delivered.

All the ten nurses interviewed reported positive attitude towards giving health education. For example, nurse respondent10 said *"…health education is very important because when we make them aware of the problems and preventive methods then they can take care of themselves better and it can also reduce the financial burden in government who is giving free health to all the people…."*. On the other hand, self-efficacy towards giving health education is reported to be high by all the nurses. All the nurses expressed confident towards giving health education. The reason often cited for being confident in giving health education and performing activities such as showing mother how to prepare and how to feed the child with ORS, was the years of experience. For example, nurse respondent 3 said, *"…I feel competent to treat diarrheal cases especially when it comes to treatment and giving health education. I have been dealing with such cases now for almost 20 years…."* The same was reported by nurse respondent6, "… *I feel confident. Obviously years of experience do help and yes, I am competent to give health education as I have been doing that all the time. I am able to speak many local dialects which help me…".* The other motivation factor to give health education is the social norms. The most common respond for the social influence on giving health education was seen to be norm important others. For example, nurse respondent 4 and 5 who works in the same clinic which functions in conjunction with the physician expressed that they doctors expects them to give health education to the patients. For instance, nurse respondent 4 said, *"we have doctors sending patients here when observation is required. During the observation period they expects us to give health education…"* While nurse respondent 5 pointed out the role model

effect, the negative influence of it on giving health education. She said, "*Especially I used to have so many seniors who use to take less initiative in doing such things…like they use to sit in the duty room more than being with the patients. I think that we might have adopted these too…we do give some basic information but not detailed health education… I think we are too lazy to do that."* Whereas, nurse respondent 8 said, *"well we work in community so we are expected to give health education by the ministry of health …".* But majority of the nurses said that giving health education is part of their job responsibility. For instance, nurse respondent7 reported, *"Giving health education is one of my job responsibilities. I feel that every care without health education is incomplete".*

The intention to give health education is yet another determinant that is very important. When nurses were asked about their intention to give health all the ten nurses stated that they will give health education. Often the reasons given for this intention was of it being part of their job, they are expected to give health education while some cited the benefits of health education as in not getting sick in future and even if they get sick how they can take care of themselves. For example, nurse respondent1 said, "*As it important and can save lots of money for the government I will do my part. I will give health education to patients as they come by*". Nurse respondent8 said that, *"health education is very important and I enjoy talking with patients and giving health education. I will give health educations to all the patients as it will benefit them".*

Hence, overall the quotes suggest that all the ten nurses when interviewed they do have a good knowledge and awareness of the content of the health education, how and when the health education should be given. They too reported positive attitude towards giving health education. All the nurses reported confidence in giving health education. The common reason cited for being confident in given health education was the long years of experience to deal with the same problems. This perceived controllability to give health education consists of self-efficacy and controllability as per theory of planned behavior. The controllability, the ability of the nurse to give health education for example having adequate support to give health education, time etc will be considered in organizational determinants. It is found that social influence to give health education was more referred to it being as a part of their job

responsibility. Therefore, through the interviews and quotes presented above, it illustrates that the nurses on the whole does have motivation to give health education, but this motivation is not strong. The reason could be despite having positive attitude and confidence in giving health education, the nurses feel that they have to give health education as it part of their job responsibility, which is reported by all the nurses. All the nurses reported intention to give health education. Nevertheless, as explained by the theory of planned behavior the intention can be influenced by knowledge/awareness, social norms and perceived controllability together or perceived controllability alone. To shed more light on the controllability, ease to give health education organizational determinants are thus reported in the following section of the result.

4.3.2 Organizational determinants

In this section, the results on the organizational factors are presented. The data set used for reporting the results were the in-depth interview with immediate managers of the clinic and in-depth interview with nurses. Field notes maintained by the researcher were also used for reporting of the results whereever necessary. The organizational determinants are discussed more in terms of facilitating and impeding factors for the nurses to give health education. All the ten nurses when interview expressed one or the other challenges that they faced which they claim hinders them in giving the health education. The constraints that they expressed were the physical set-up of the clinic, staffing, availability of resources, role clarity, teamwork, and trainings.

Three out of ten nurses interviewed reported that the unavailability of separate room for each of the staff make it difficult for them to give health education. For example, nurse respondent2 of the clinic2 said that: *"…currently is the space problem…as you can see we are all in one room and it is difficult to give health education when all of us are in the same room and also when the patients are hovering around. There certainly is the issue of giving and maintaining privacy of the patients…"*. This shortage of the space was also reported by nurse respondent 7 of clinic 6, *"hhmm…. health education…(pause) some.. we come across difficulties like in case someone has STI then it is difficult to counsel them when there is lot of crowd so we take them to another room and give them the health education. Maintaining privacy is one thing that is a problem…".* The managers of both the clinics agreed and reported that they do

have problem with the space and inability to maintain the privacy of the patients during counseling. For example manager 4 of clinic2 said,*"…we have only one room and all of us (three) are in this same room, it is tough and very congested and crowded. Having separate chambers for each of us would be nice, I think …then we may also be able to spend more time in patient education and as well maintain privacy of the patients."* It was also observed by that these two clinics did have only one big open space where three of the health workers were taking care of the patients.

Resources in the form of availability of ORS in the clinic, water filter, a pint measure or a liter of bottle for preparing ORS, availability of health education aids like posters/pamphlets/flip charts so that the nurses doesn't experience hindrance when they give health education is reported here. Use of aids such as posters/ pamphlets and leaflets increase the awareness of the mothers thus improving the health seeking behavior (Cropley, 2004). All the nurses reported that they have adequate supply of ORS and drugs in the clinic. They also reported that they have good and continuous water supply and inventories required for the preparation of the ORS. Nurses of the clinics 1, 2,3, 5, 6 and 7 mentioned that they actually don't have the necessary health education aids especially for diarrhea and no audio-visual aids were used during the counseling. For example, nurse respondent7 of the clinic six said,*"….well for diarrhea we don't have things like pamphlets or leaflets that can be given to the mothers to take home, but we do have one or two big posters on hand washing and sanitation.."* This lack of audio-visual aids was confirmed by mangers. For example manager 2 of the clinic 6 said, "*If they give health education then yes I think that I have the necessary things available for them….. have banners and some flip charts… you can see those posters there, some flip charts, water filters, boilers (for diarrheal cases) and if they say what they need I am willing to put up a requisition for them from the MoH".* All the five managers' interview maintained that they have adequate resources available for giving health education and they are also willing to make the resources available if the needs are felt by the nurses.

Adequacy of the staffing was reported by all the nurses of the six clinics except for the nurses of the clinic 4. For example, nurse1 of the clinic1 said, *"I think when it comes to number of staff here in the clinic we are comfortable. I don't feel the shortage of staff. Although*

sometimes when one or other staff becomes sick or goes on holiday then we face problem. But then we manage it. The functioning of the clinic is not disrupted". The manger1 of that clinic too confirmed, *"We are four at this moment, which makes the work little better. We have separate pharmacy brother who takes care of the dispensing of medicine which makes our work lot easier. We are comfortable as of now".* Whereas, nurse respondent5 expressed, *"…so many patients come and we are only two in the clinics which makes it really difficult to give detailed health education to individual mothers"* The manager3 of this clinic4 also expressed shortage of the staff. *"..the problem we face is with the shortage of staff and sometimes we have lots of patients coming in but when the personnel from hospital administration visit somehow their visit coincide with the time when there are less patient. They just tell us that we are not overloaded. I always ask for an extra staff but then they always give me the staff shortage in the whole country as the reason and what can I do then"*

All the ten nurses and five manager from seven clinics who were interviewed reported that they lack clear and well defined job responsibilities. For example, Nurse respondent 1 reported, *"Well actually, I am trained in family planning and doing PAP smears. So I mainly look after family planning but I also look after the OPD cases when the HA is not there….and I manage all types of complain that come to the clinic."* When asked if lack of clear job description hinders the giving of health education especially in diarrheal cases, nurse respondent1 reported that, "*Well Diarrhea is not considered serious by people. Everyone knows the treatment for Diarrhea. They usually either buy ORS from the shop or they give home remedies like plenty of soup and liquids…we do send them home with the advices on cleanliness and hygiene and to give ORS….and yes sometimes there are a lot of patients waiting in long queue which makes use difficult to spend more time with one patients….".* This lack of clear role clarity was also expressed by the manger 1 of the clinic1. He said, "*Well don't actually have a well-defined work/job description. We all can do the care around like prescribing drugs and giving drugs or doing minor procedures like antenatal checkup or dressings. But yes apart from that our nurse is also trained in insertion of PAP smear, she is the only one who does that. We function as one unit"*. Manger 4 of the clinic 2 also reported the same. He said, *"Royal civil service commission (RCSC) and Ministry of health (MoH) did come up with Job description for*

each of us and in which position level we are as a civil servant but those job descriptions are not that well defined. It is confusing and we don't follow those in our clinic….. If we have to follow that job description then I think we need more health professional of different levels to function in this clinic alone. And this will not happen as there is shortage of man-power in health already.". Thus from the interview with the nurses and the managers it was noted that there is no clear job description of either the nurses or the manager. During the observation, it was also seen that both the nurses and the managers handled and managed all types of cases that came seeking health care.

All the nurses and the managers of the clinic expressed timing of the clinics as convenient and comfortable. All the clinics opened at 9am until 3pm on weekdays and on Saturday it opened from 9am until 1pm. For example, nurse respondent2 of clinic2reported: *"I am happy and satisfied with the clinical timings….unlike in the hospitals we don't have to admit patients and carry out night duties or the evening duties..".* This was also agreed upon by nurse respondent 4, "*unlike in the ward, where I use to work before I feel happy here. The timing is excellent, I don't have to do night duty and I get to spend Sundays with my kids.*" None of the nurses who were working in the clinics had to night duties except for some occasional emergency on-call duty. Therefore, from the quotes above it can be deduced that the clinical timings doesn't seem to impact the giving of the health education by the nurses. The timing of the clinic is not seen as the constraint towards giving health education. Nevertheless, the nurse spent maximum of 4-minutes for each patients, which the nurses reported to be satisfied with and considered enough time to be spent with the patients. For example, nurse respondent3 said, *"well that amount of time I feel is also enough as I don't feel guilty of not giving care to all the patients due to time constraints. As during this 3-4 minutes I concentrate more on their chief complaints I think it is enough*." While nurse respondent 4 said, *"hhhmmm…. About time I don't know but eh…the main thing I feel is that I try to give my time..and eh..some patients it takes only 1-2 minutes because they are chronic patients they know what to do and thus I give less time. But those new patients I make sure that they know why they have got ARI, what to do now in future, how to prevent it from reoccurring… uhhmmm… I think I am satisfied with the amount of attention given to them."*

All the nurses of the seven clinics expressed that they have a very good teamwork and maintain a very good working environment except for one clinic where the nurses expressed their unhappiness with their colleagues. Nurse Respondent5 of the clinic 4 reported: *"I feel that we receive zero support from the organization…nobody bothers what we might be going through…you are paid so you do the job is what they seems to be thinking.. we are only two and most of the time she is away…if she is on duty for a day then she won't be coming to duty for next two days….and most of the time I get called to do the duty. I am mostly working alone. ..She receives immediate help from the nursing superintendent whereas I dont…Sometimes it is really frustrating……"* Whereas nurse respondent 4 of the clinic 4 said, *"I functions as an in-charge and also as a staff in this clinic. I am assistant nurse by education level but she is general nurse midwife...although by experience I am more senior to her but by qualification she is more qualified than me..and sometimes it so happens that I can't tell her what she can do or what she cant….it becomes odd situation for both of us then".*

Four out of 10 nurses interviewed expressed the trainings that they receive is inadequate, in-fact all the nurses reported that none of them have received a training exclusively on communication or on health education. They also expressed that these lack of training does affects them on delivering health education. For example, nurse respondent3 said: *"…in country we get timely in skill development. On health education exclusively is bit difficult but it comes as part and parcel of other workshops that we attended… It provides us a source of updating and getting new knowledge. It is helpful for example we recently had EPI workshop which lets have get ourselves acquainted with the changed regime of the treatments..".* Whereas nurse respondent 5 and 6 of clinic 4 said that although they have been trained in integrated management of childhood illness they hardly get trainings or workshops. For example, nurse respondent 5 said, "trainings are good for us as it increases our knowledge…but it seems like due to lots of nurses in ministry of health we hardly get to go for training or workshops. I haven't been to trainings for last 3 years. It is demotivating sometimes..the training selections are all done by people up there (referring to people in MoH)". When the manager of the clinic were raised questions on motivation for the nurses, all five of the expressed that having an adequate training is one way of motivating staff, but they

also expressed that they don't have any authority on trainings as they are centrally governed by the ministry of health of Bhutan. For instance, manager1 of clinic1 said: *"Training and stuffs are in my hand but some time they ask me to nominate a candidate and yet sometimes candidates are already nominated by the ministry. Well those trainings are good and important because it provides the staff with new knowledge and some get away from daily activities…. All I can do in my power is to motivate them by encouraging them in what they do and listening to their problems both personal and profession"*. This was also confirmed by the Manager 4 of clinic2, *"uhhmmm….. The only thing that I can do in my position and situation is to encourage them and give positive feedback. I tell them "you can do it" and assist them with the things or resources they need. Ministry announces the training or the workshop and I am asked to send the nomination, sometime…. sometimes the candidates are selected directly by the ministry and sent to the workshops".*

From the above quotes following conclusions are drawn. The nurses in clinic 2 and 6, stated that the lack of a separate room for counseling to be a major problem in them giving health education. The managers also confirmed this lack of privacy. Lack of separate room can also be associated with the nurses' perceived controllability to give health education. Since maintenance of privacy during deliverance of health education, this could be one reason for not giving detailed health education or spending more time on a patient, as mentioned by the nurses. Both the manager and the nurses in all the six clinics felt that they are comfortable with the number of staff they have presently. However, the nurses and manager of clinic4 expressed frustration and increased workload due to shortage of staff. The opening hours of the clinic (7 hours a day) is stated to be convenient. The maximum time spent by the nurses on each patient during the encounter was 4-5 minutes. The amount of time spent on each patient is reported to be enough by the nurses, which is suggested otherwise by Beck and colleagues (2002). Spending less time on patients could be one reasons for the current quality of health education. The reasons cited for not spending more time were the nurses reporting the assumption that mothers knew what is diarrhea and what to be done during diarrhea or mother refusing to listen to the talks given by the nurses. The nurses in all clinics stated that they do have adequate and timely supply of the drugs unlike the places they used to work before. All the

nurses maintained that they do not have audio visual aids that would help them in giving health education like charts, or pamphlets etc. however, the all the managers maintained that they have all the required supplies and they are willing to put up requisition of any materials the nurses may want for giving health education. This could be another factor that could have led to the current health education as there not having resources could have limited the nurse in giving the health education.

Both the nurses and the managers of the clinics agreed upon not having clear-cut job responsibilities. Therefore, all of them give care to every kind of diseases and patients, even when they have been trained for specific purposes like reproductive health. Having clear role clarity and job description leads to improved job satisfaction (O'BRIEN-PALLAS et al., 2010) and when nurses job satisfaction is seen to have positive relationship to quality of care delivered (Kwak et al., 2010). The nurses of six clinics claimed good teamwork, as in co-operation, division of work and helping and understanding one another. In contrast, nurses of clinic 4 expressed being unhappy with each other. The reason stated by both the nurses was the difference in their qualifications. Having a good teamwork within the care givers is seen to increase the level of job satisfaction and thus the management and quality of care given (Mohr et al., 2011). Four out of 10 nurses interviewed expressed, the trainings that they receive is inadequate, in-fact all the nurses reported that none of them have received a training exclusively on communication or on health education, which was the concern raised by the managers too. They also expressed that these lack of training does affects them on delivering health education by demotivating them. Overall, individual determinants and organizational does influence the nurses in addressing all the health behaviors, BCTs used and general communication observed. The influence of the factors explained does seem have an impact on the current quality of health education.

Chapter 5

5 Discussion

Globally, diarrhea among under-five children has been one of the major contributors to high mortality and morbidity rate amongst under-five children. The impact is found to be more pronounced in developing countries. Despite the global trend of decreasing mortality rate due to diarrhea, the morbidity rate remains unchanged. Diarrhea in early life of childhood has been studied to have impact on the quality of life of the children in their later life. In light of the diarrheal diseases being one of the highly contributing diseases for the increased morbidity and mortality among under-five children especially in developing countries, many interventions to reduce the impact are established. Numerous studies have been carried out to establish the various interventions such as preventive measures for example hand-washing with soap, good early weaning practices, water treatment at home level. These studies on interventions have found that the diarrhea incidences were reduced considerably. Health education plays a key role in promoting the uptake and adequate use of these prevention and treatment behaviors, and clinics treating children with diarrhea seem to be a setting in which that health education could be delivered to people at high-risk. However, no studies have been traced which focuses on the content and the quality of health education given by the nurses nor the variability in health education given, especially in diarrhea prevention amongst children in Bhutan or elsewhere.

Seven health clinics were conveniently chosen from a district called Thimphu in Bhutan. Two nurses (total n=10) from each clinics were interviewed. Approximately four nurse-patient interactions were observed for each nurse, to see explore the content and the quality of the health education given for the mothers for prevention of diarrhea amongst under-five children. After the observation of interaction with patients, each nurse was interview using semi-structured interview guide. To see how organizational factors influences the quality of health education, immediate manager of the respective clinics were interviewed (n=5). The observation of the interactions for each nurse was then compared with the in-depth interviews done with the respective nurses to see the similarities and discrepancies. Thus in the following section the results will be discussed and compared with some studies done.

5.1 Discussion of major findings

The major findings of the study are discussed under a) Are the three health behaviors addressed? b) What was the quality of health education given? c) Variability of the quality health education from nurse and manager perspective, and d) Role of determinants in quality of health education

a) Are the three health behaviors addressed?

This section discusses the results based on the behaviors addressed by the nurses during the interaction. The interactions observed is compared with the interviews done to see the difference between what is reported and what is observed, in-terms of the health behaviors addressed. The major finding of this study was the nurses were well aware of the importance of the health behaviors concerning the prevention of diarrheal diseases, importance of early health care seeking and the importance of preparing and giving ORS during the diarrheal episodes. Hence, nurses seem to be well aware of the importance of these behaviors and the type of information that is relevant for the parents. Major discrepancies were nevertheless observed in self-reporting by the nurses and their actual patient interaction. Many of the nurses addressed predominantly the health care seeking behavior (of 93%), as to when to bring the child to the clinic/hospitals and how to prepare ORS and give it to the child. It was also evident that those nurses who shared a room addressed less of health behaviors while on the other hand those nurses who had their own working space addressed more health behaviors. These discrepancy in what is reported by the nurses and what is being observed in practice could be associated with factor like individual determinants- peer pressure, self-efficacy (Sax et al., 2007) or factors such as role model (Lankford et al., 2003), which is discussed in section 5.3. However to bring about changes in behaviors it is important to influence the behavioral determinants (Ajzen, 1991) which can be done by behavior change techniques.

b) Behavior change techniques used

In order to bring about changes in behaviors it is important to change the determinants of the behaviors (Ajzen, 1991). Thus to target these determinants there are behavior change techniques (BCTs) (Abraham and Michie, 2008) which have been validated through many studies and have been used in many intervention studies especially health education for

example it has been used by de Bruin and colleague (2009). Thus, this section presents discussion on BCTs used by the nurses.

Although the nurses had knowledge and awareness of health behaviors to be addressed, they used very few behavior change techniques. Out of 38 BCTs defined (refer Appendix 1) the maximum number of BCTs used by a single nurse was four and the minimum was only one BCT. The result shows that the nurse who was having the highest educational level used more behavior change techniques than any other nurses did. Whereas, the nurse who used the least BCTs, was also the one who had a year of diploma certificate in nursing, the lowest level of education in nursing although she had been working for the last 22 years. Hence, this shows that there is some association between the qualification and the quality of health education given by the nurses. Blegen and colleagues (2001) argued, higher the education level and year of experiences better is the quality of care. However, no influence of years of experience was seen in either addressing all the health behaviors, neither in use of BCTs nor in general communication style use during the health education. The information given by the provider for the change of behaviors are influenced by the general communication style (DiMatteo, 2004). Therefore, the next section presents the discussion on general communication during the interaction and subjective reporting of the communication style by the nurses.

c) General communication style

This section discusses the communication style observed during the interaction and what is reported by the nurses. When the communication style was converted into percentage, it is found to be satisfactory, overall. In general, it is seen that the clinics which has separate rooms for the nurses scored higher in the application of general communication style and also addressed more health behaviors. Qualification, years of experiences, and neither age of the nurses nor the sex of the nurses seem to influence the use of general communication style. Nevertheless, nurses reported the importance of good communication style like shared-decision making, empathy, listening to patients, which lots of studies prove that these conditions are important for change of behaviors (Clark et al., 1986, Clemens and Stanton, 1987, Norton, 1998, de Bruin et al., 2010). and quality of care (Stewart, 1995). (Bultman and

Svarstad, 2000, Schoenthaler et al., 2009). This clearly implicates that there is gap between what is known and what is practiced and applied during the interactions. However, when the above three conditions were combined it resulted in poor quality of health education.

This however as various studies pointed out that quality of care given could be influenced by the individual determinants such as knowledge, motivation and intention, and organizational determinants like adequate staffing, role clarity, teamwork, trainings (Lamiani and Furey, 2009, Aiken et al., 2002, Adams and Bond, 2000).

d) Role of individual and organizational determinants in quality of health education

The results suggest that all the ten nurses a good knowledge and awareness of the content of the health education, how and when the health education should be given. All the nurses although reported positive attitude towards giving health education and they saw giving health education as being part of their job responsibility and that they have to perform it. This could have biased the attitude towards health education by giving socially desirable answers. Although, many nurses gave socially desirable answers one nurse did report the role modeling, for example her senior not giving the health education and following of the ongoing trend of laziness. Role model is seen to have an effect on the behaviors of the caregivers which for example was seen in the case of hand-washing by the nurses students for the infection control by Lankford and colleagues (2003). Self-efficacy, which was, reported in terms of expressed confidence, all the nurses reported confidence in giving health education crediting to the number of years of experience as a nurse.

While the individual determinants were biased by socially desirable answers, organizational determinants do have influence over the current quality of health education. Having separate room for each health workers does show slight differences (13% and 11%, highest amongst other six nurses) in quality health education given for example in the case of clinic 3 and clinic 7. Adequacy of staffing is seen to influence the quality of care given to the patients (Aiken et al., 2002, Adams and Bond, 2000). Thus, the current quality of health education could be associated with increased workload due to staff shortage as pointed out by for example nurse respondent5. Reed (1988) reported that having clear job description increases the job satisfaction level thus the quality of care given. Both the nurses and the

manager agreed upon lack of clearly defined job responsibility, which could be one reason for the current health education.

5.2 Strength and Limitation of the study

The strength of this study was the strong study framework developed based on the Theory of Planned Behavior which has been validated by many authors, for example, Abraham and Michie (2008) and Ajzen (1991). The other strength of this study is that almost all the clinics with the nurses who encounter the high-risk population were included for the study. To see the variability of the health education in different clinics, the immediate managers of the clinics were interviewed too besides the nurses. The other strength of this study is that initially only five clinics were targeted but then seven clinics had be taken into consideration due to unavailability of targeted sample of nurses. This led to see more variability amongst the clinics. The other strength of the study was that the nurse-patient interactions were audio-taped which enabled the researcher to collect objective data of what happens in standard health care.

This present study is subjected to numerous limitations. The first limitation was the managers not cooperating with the study. Out of managers of the seven clinics, only five managers agreed to take part in the study. Two of the managers refused. Among two of the managers, one of the manager was from the clinic where both the nurse addressed all the desired health behaviors in diarrheal prevention. Second limitation could be seen as not being able to reach the clinic, which was situated at the periphery of the town, as that particular clinic was two-day walk from the nearest road point. The third limitation is about the interview schedule. Ideally, the interview schedule is pretested and corrected before real data collection. In my case, I did not pretest the questionnaire due to time constraints. The other limitation is that quality of health education as confirmed may be biased as it was based on mainly subjective reporting by the respondents and it could be influenced by socially desirable answers given by the nurses. Lack of previous studies related to health education by the nurses limited the results of this study. Furthermore, this study was carried out within time and financial limitation.

5.3 Conclusions and Recommendations

Exploring the content and quality of health education given by the nurses in the clinics and the factors that influences the quality of health education, this study aims to bridge the scientific knowledge gap. Desired health behavior was one component that was looked into. It is found that the nurses do have a knowledge and awareness of the health behaviors to be addressed during the health educations. It was evident from the interactions observed that the nurses addressed more of health care seeking behaviors (93%), treatment adherence behaviors (88%) and preventive measures (52%). These behaviors to be addressed differed amongst the nurses and within the interactions observed for each nurses. To have an impact of health education it is seen that it is very vital to target the behavioral determinants of the patients so that modification in behaviors can be brought upon. In order to target the behavioral determinants such as knowledge/awareness, motivation (attitude, social norm and self-efficacy) and intentions, BCTs are used, which has defined sets for techniques for the respective determinants. Out of 38 BCTs, the maximum number of BCTs used was four, and the most commonly employed technique was the one aiming at knowledge 'providing general information'. When collective percentage was drawn to see how much the BCTs used targeted the behavioral determinants it is seen that the determinants were poorly targeted (1 to 3%). Discrepancy in what is known and what is being exercised was evident in the use of general communication style too. It was observed that the nurses did know the importance of the shared-decision making and empathy to be important during the care giving, however, this awareness and knowledge failed to be exhibited during the interactions. Overall, the general communication was found to be satisfactory (scored within the range of 20-40%). These three components when combined to observe the current quality of health education, gave the current health education to be poor in quality. Some differences in percentages amongst the nurses in this category is seen which can be the influence of the individual and organizational determinants. The individual determinants that seemed to influence more is the role modeling, the social norm and it can also be seen that the nurses often referred to giving health education as being part of their job responsibility. The variability in the quality education was more associated with the organizational determinants like adequacy of staff, resource availability,

lack of role clarity, and teamwork. Of these determinants addressed it is found that lack of role clarity to be more pronounced.

This research nevertheless contributes to the body of knowledge regarding the nurse-led health education especially to the high-risk population. It is essential that managers and nursing heads integrate the result from this study and other studies in improving and developing strategic and tactical nursing interventions that can lead to effective health care deliverance by the nurses. Sensitizing and making the nurses aware of the behavior change techniques would immensely help the nurses in taking the current level of education to the higher level, which could be done through training and workshops. In order to define the quality of the health education this study focused on the provider's experiences and expectation, and the organizational impact, however to change the behaviors the determinants from the patient's side would also impact the quality of the care. Thus measuring the variables for the patient side would shed more light on the how effective is the health education, and whether the patients really exercise the behaviors addressed which is also been recommended by Currie and colleagues (2005). Because the health system of Bhutan is more hierarchical, research in system organization would contribute in improving the functioning of the health care givers at grass root levels. One important aspect of the culture of the organization as mentioned by the nurses was the role model. One of the ten nurses pointed out that one of the reasons of not giving detailed health education to the patients even when they had ample time was that they might have picked up the habit from their seniors who had been lazy themselves. Lankford and colleague (2003) concluded that health-worker's behaviors can be significantly influenced by the behaviors of other health-care workers. Therefore, a study into the culture of the nursing in Bhutan would immensely benefit the working intention of the nurses.

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Appendices

Appendix 1: Taxonomy of behavior change techniques: used for individual nurses on each interactions with patients

Determinant		**Technique (BCT)**	***1***	***2***	***3***	***4***	***5***	***6***	***Remarks***
Knowledge	1	Provide general information							
		Tailoring							
		Individualization							
	2	Increase memory & understand.(use of audio-visual aids)							
Awareness	3	Risk communication							
		Tailoring							
	4	Self-monitoring of behavior							
	5	Self-report of behavior							
	6	Electronic monitoring of behavior							
	7	Reflective listening							
	8	Delayed feedback of behavior							
		Objectively measured							
		Subjectively measured							
	9	Direct feedback of behavior							
	10	Feedback of clinical outcomes							
Social influence	11	Provide info peer behavior							
	12	Social comparison peers							
	13	Norm important other							
Attitude	14	Reevaluation, self-evaluation							
	15	Persuasive communication							

		Tailoring							
	16	Reward behavioral progress							
	17	Reward motivational progress							
Self-efficacy	18	Modeling							
	19	Verbal persuasion							
		Tailoring							
	20	Practice, guided practice							
	21	Plan coping response							
		Participation							
	22	Graded tasks, goal setting							
		Participation							
	23	Reattribution, external attribution							
Intention	24	General intention formation							
		Participation							
	25	Develop medication schedule							
		Tailoring							
		In writing							
	26	Specific goal setting							
		Participation							
		In writing							
	27	Review general or specific goals							
		Participation							
	28	Agree behavioral contract							
Action control	29	Use of social support							
	30	Use of cues							
	31	Self-persuasion							
Maintenance	32	Goals for maintenance							
		Participation							
	33	*Further prevention of diarrhea							
		Participation							

Facilitation	34	Provide materials							
	35	Continuous professional support							
	36	Individualize regimen							
	37	Cope with side effects							
	38	Reduce environmental barriers							
		Macro tailoring? Yes / No		How?					
			Tailoring number of visits?: Yes / No						
			Format used: Group / Telephone / 1-on-1 counseling						
			If 1-1 or group counseling: who was counselor?						
			Counselor: Well-trained/ some training/(almost) no training/ Do not know						
			Additional materials used (e.g. brochure/other helpful aids)						

Appendix 2: Interview schedule for Nurses

Thank you so much for agreeing to take part in an interview, by doing so you are contributing to a better understanding of the role nurse in delivering health education particularly diarrheal prevention. This will also help us to evaluate the health education and learn the constraints and further seek to address the problems you all are facing during such encounters. Just a reminder that our conversation will be tape (memo) recorded and the interview will take about 45 minutes to an hour. The interview will be informal – please feel free to interrupt me or ask questions during the interview. If you do not want to answer any of the questions that I ask, feel free to say so, and we can move on or we can stop.

1. **Opinions/values -what a person thinks about the topic**

a. So you are a nurse: what do you like most about your job?
b. What do you consider the main responsibility of nurse in your position to be?
   i. For example?
   ii. Why do you feel that can you explain it, please?
c. How do you think/feel about the expectations that are being put on to you (eg. Your co-workers/ doctors/ family members etc)

2. **Behaviors what a person has done or is**

a. How many patients you give care to on daily on your shift time?
b. What kind of patients you encounter on daily basis?
c. How much time are you able to spend with each patient on such days?
   i. How do you feel about the amount of the time that you spend on individual patient?
   ii. If happy / satisfied or not happy, would you please explain why?
   iii. What happens if patients demand more attention and time from you?
      1. What do you do and how do you find your way out of this?
      2. What do you conclude from such behavior of the patients/caregivers?
      3. How do you feel when you have attended to such needs?

d. Which are the cases that you give priority to when patients visit to clinic?

i. Would you give example of it?
ii. Can you explain bit further on it (why)?

e. What about diarrheal diseases?
i. Which age of cases do you give priority and why?
ii. What is the standard care that you follow during such encounters?
iii. How do you feel about giving care?

f. What about health education?
i. Can you elaborate on why you feel that health education is important/not important?
ii. What do you include in the health education?
    1. *Preventive health behaviors*
    a. Why do feel that it is important?
    b. Do you feel that they will be able to carry out those activities at home and why?
    2. *Health care seeking behaviors*
    a. How important do you think this is to be included in the health education and why?
    b. What if they stay far from the health center and seek help from traditional healers?
    c. In such cases how do you help them?
    3. *Adherence to treatment*
    a. Do you feel that adhering to treatment is important? Can you explain it?
    b. How do make sure that they take the medication on time and complete the course of the treatment?
iii. Why do you think those components are important in such cases?
iv. How do you ascertain that the caregivers/parents have understood what you have told them?
v. How competent do you feel in giving such care including health education?
vi. When do you feel that health education is effective?
vii. What should health education contain and why?
    1. Can you give me an example?
    2. Would you explain it more, please?

viii. What are the some problems that you feel that hinders you from giving good care/health education
    1. For example?
    2. How would it help you and why do you feel that it is important to you?

ix. How often does it happens that you receive the same patient with the same complain next time?
    1. What do you feel must be going wrong there and why?
    2. Can you think of any ways that might help them if yes, what could be those and why do you think so in your capacity?
    3. If no, whom do you see as the potential helper and why?
    4. What could those people do?

3. Knowledge - to get facts about the topic

a. What kinds of formal trainings have you received in management of diarrheal diseases?

b. What did those trainings cover?
    i. Did any of these trainings cover health education?
    ii. What aspects/components were covered?
    iii. How did you feel about those training and why?

c. What do you think of communication when you encounter with the patients who are in need of help (importance)?
    i. Did you receive any kind of trainings on communication? If yes, what did it cover and how has it helped you?
    ii. Are you aware of any kind of communication techniques? If yes, can you elaborate on it? Which form of communication technique you use very frequently?
    iii. What do you think of behavior change techniques (BCT)?
        1. Can you give some examples?
        2. How important do you think are those techniques are?
        3. Where can you use those techniques and in what context?
    iv. How important do you think updating your knowledge is and why?

v. What are the common sources from which you update your knowledge?

4. Background/demographics -standard background questions

a. Gender: Male /Female
b. Marital status; Single /Married/Cohabiting Divorced/separated
c. Age
d. Nursing Education Level; AN/ANM/GNM/BSc/MSc/HA
e. Ethnicity; Western and central Bhutan (ngalop)/Eastern Bhutan (sharchop/khengpa and other dialect speaking)/Southern Bhutan (lhotshampa)
f. Years in Service; Less than 5 years/5-10 years/10 years and above
g. Designation ; Chief Nurse/Staff Nurse-I/Staff Nurse-II /Staff Nurse-III/Other

Ending

I have finished my questions. Before I say my final words to you, I would like to find out if there is anything you would like to add on the topic, or if you would like to clarify or add to anything you said. Thank you for your valuable time spent with us, I do appreciate it. Again, your information will be handled with care and remains confidential. If you have any further questions later on, please contact me by the email and address provided.

Thank you!!!

Appendix 3: Interview schedule for the Managers

Thank you so much for agreeing to take part in an interview, by doing so you are contributing to a better understanding of the role nurse in delivering health education particularly diarrheal prevention. This will also help us to evaluate the health education and learn the constraints and further seek to address the problems you all are facing during such encounters. Just a reminder that our conversation will be tape (memo) recorded and the interview will take about 45 minutes to an hour. The interview will be informal – please feel free to interrupt me or ask questions during the interview. If you do not want to answer any of the questions that I ask, feel free to say so, and we can move on or we can stop.

1. So, I hear that you are the immediate manager of this clinic.
2. For how long have you been working here now as the manager?
3. How long have you been in health sector?
4. Before this where have you been working?
5. So being posted here how do you feel?
6. So seeing more patients here do you face any problems?
7. How many staff do you have at this moment in the clinic?
8. So how about their background?
9. So you are HA and the immediate manager of this clinic, as the manager what are your job responsibilities? How about the nurses? Do they have a clearly written job description? What exactly is the differences between you and the nurses as I see all of you doing the same job.
10. What is the working hours of the clinics?
11. What do you feel about the working hours?
12. So in order for you to be in this clinic did you receive any kind of formal trainings or anything of that kind that helps you with management? If yes can you elaborate on what kind of trainings etc
13. How many patients does your clinic receive in a day?

14. So on over-all how do you feel about the adequacy of staff? Some of staff pointed out that they feel pressured and frustrated with the workload..what do you think of that..and what could be causing it? How do you solve it?
15. How do you feel about the number of patients you receive and the staffs you have?
16. What are the health services provided by your clinic?
17. You also give health education, what kind of health education you give (mass or individual) and on what topics mainly you give….
18. What do you feel about the health education? Why?
19. What do you feel is necessary for giving health education? Can you give me some examples? And why do you think they are the necessary resources?
20. How do you manage those resources?
21. Do you all receive any kind of trainings or workshops? So how are they chosen and who chooses whom to be sent for the trainings?
22. Do you think that your staffs are getting enough training? How and what kind of trainings? Can you give me some examples? What are your opinions on it?
23. What do you think limits the health staff here in giving health education?
24. What do you feel about the way the clinic is set up?

Ending

I have finished my questions. Before I say my final words to you, I would like to find out if there is anything you would like to add on the topic, or if you would like to clarify or add to anything you said. Thank you for your valuable time spent with us, I do appreciate it. Again, your information will be handled with care and remains confidential. If you have any further questions later on, please contact me by the email and address provided.

Thank you!!!

Appendix 4: Combined percentages of the components

Nurse respondent	Behavior addressed		Determinants targeted (38BCTs/interaction)		General communication		Combined total		Total percentage=total observed/total expectedX100
	Observed	Expected	Observed	Expected	Observed	Expected	observed	expected	
NR1	10	15	5	190	7	20	22	225	10
NR2	13	15	5	190	7	20	25	225	11
NR3	9	12	6	152	5	16	20	180	11
NR4	10	15	5	190	6	20	21	225	9
NR5	7	12	4	152	5	16	16	180	9
NR6	8	12	4	152	5	16	17	180	9
NR7	9	12	3	152	2	16	14	180	8
NR8	8	9	1	114	3	12	12	135	9
NR9	12	12	4	152	7	16	23	180	13
NR10	12	12	4	152	7	16	23	180	13