A STUDY ASSESSING THE IMPACT OF ACADEMIC DETAILING PROGRAM ON CHILDHOOD DIARRHOEA MANAGEMENT AMONG THE PRIMARY HEALTHCARE PROVIDERS IN BANKE REGION, NEPAL

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by

SAVAL KHANAL

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DEDICATION

Most sincerely and humbly I dedicate this thesis to my beloved father Late Mr. Shyam Prasad Khanal (1957 AD- 2006 AD) who left me and my family few years back. These all works and this thesis were possible only by the education and motivation given by him during various stages of my life. I hope he will be proud to see all the efforts put on this research and thesis work.

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ABBREVIATIONS

AHW= Assistant Health Worker

ANM= Assistant Nursing Midwifery

A-Score= Attitude Score

CB-IMCI= Community based Integrated Management of Childhood Illness

CDD= Control of Diarrhoeal Diseases

DDA= Department of Drug Administration

DIC= Drug Information Center

DINoN= Drug Information Network of Nepal

DoHS= Department of Health Services

F/U= Follow up

HA= Health Assistant

HAI-AP= Health Action International- Asia Pacific

HP= Health Post

INGO= International Non-governmental Organization

IQR= Interquartile Range

KAP= Knowledge, Attitude and Practice

K-Score= Knowledge Score

MBBS= Bachelor in Medicine and Bachelor in Surgery

MoHP= Ministry of Health and Population

NGO= Non-governmental Organization

NHRC= Nepal Health Research Council

ORS= Oral Rehydration Salt (Solution)

ORT= Oral Rehydration Therapy

PHCC= Primary Healthcare Center

P-Score= Practice Score

SD= Standard Deviation

SHP= Sub-Health Post

UNICEF= United Nations Children's Fund

US= United States

USAID= United States Agency for International Development

WHO= World Health Organization

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KAJIAN MENILAI IMPAK PROGRAM PERINCIAN AKADEMIK BERKAITAN PENGURUSAN DIAREA KANAK-KANAK DALAM KALANGAN PEMBEKAL PENJAGAAN KESIHATAN PRIMER DI DAERAH BANKE, NEPAL

ABSTRAK

Cirit-birit zaman kanak-kanak adalah biasa di Nepal. Kajian telah melaporkan tentang pengetahuan yang cetek dan praktis penulisan preskripsi yang tidak rasional berkaitan pengurusan diarea zaman kanak-kanak dalam kalangan profesional penjagaan kesihatan. Perincian akademik telah digunakan untuk menggalakkan penulisan preskripsi secara rasional dalam kebanyakan negara maju tetapi tidak biasa di negara membangun seperti Nepal. Dengan latar belakang ini, satu kajian intervensi prospektif telah dijalankan di daerah Banke, Nepal untuk menilai kesan perincian akademik pada cirit-birit zaman kanak-kanak dan pengurusannya ke atas 235 pengamal penjagaan kesihatan primer yang telah dibahagikan secara rawak. Data berkaitan pengetahuan, sikap dan amalan dipungut dengan bantuan soal selidik berstruktur separa yang telah disahkan; dan data berkaitan corak penulisan preskripsi dipungut dengan bantuan pelanggan-pelanggan tersimulasi. Pada tahap awal, skor pengetahuan (K), sikap (A), amalan (P) dan skor KAP total untuk peserta-peserta dalam kumpulan kawalan ialah 7, 38, 26 dan 71 masing-masing; ia tidak berbeza secara signifikan daripada peserta-peserta kumpulan intervensi. Skor pengetahuan (K), sikap (A), amalan (P) dan skor KAP total untuk peserta-peserta dalam kumpulan intervensi ialah 7, 37, 25 dan 70

masing-masing. Bagaimanapun, ia bertambah baik secara signifikan dalam peserta-peserta kumpulan intervensi semasa fasa susulan kajian pertama dan kedua. Skor pengetahuan (K), sikap (A), amalan (P) dan skor KAP total peserta-peserta dalam kumpulan kawalan semasa susulan pertama ialah 8, 38, 26 dan 71 masing-masing, manakala untuk peserta dalam kumpulan intervensi ialah 11, 40, 31 dan 83 masing-masing. Pada susulan kedua, skor pengetahuan (K), sikap (A), amalan (P) dan skor KAP total untuk peserta dalam kumpulan kawalan ialah 8, 35, 24 dan 67 masing-masing, dan peserta-peserta dalam kumpulan intervensi ialah 10, 37, 28 dan 79 masing-masing. Perincian akademik juga memperbaiki corak penulisan preskripsi antara peserta-peserta dalam kumpulan intervensi berbanding kumpulan kawalan. Pada tahap awal, hanya 6.0% peserta-peserta dalam kumpulan kawalan dan 8.3% dalam kumpulan intervensi mematuhi kepada garis panduan rawatan cirit-birit zaman kanak-kanak, yang mana nyata sekali bertambah antara peserta-peserta dalam kumpulan intervensi (65.1%) daripada kumpulan kawalan (16.0%) pada fasa susulan pertama. Pada fasa kedua kajian, 69.7% peserta-peserta dalam kumpulan intervensi mematuhi kepada garis panduan, lebih baik secara signifikan daripada kumpulan kawalan (19.0%). Kos bagi mempreskripsi semasa fasa kajian pertama dan kedua dalam kalangan peserta-peserta dalam kumpulan intervensi adalah lebih rendah secara signifikan daripada kumpulan kawalan. Secara kesimpulan, perincian akademik meningkatkan pengetahuan, sikap dan amalan secara signifikan peserta-peserta mengenai cirit-birit zaman kanak-kanak dan pengurusannya. Ia juga memperbaiki corak penulisan preskripsi, meningkatkan kepatuhan peserta-peserta kepada garis panduan klinikal dan mengurangkan kos preskripsi merawat cirit-birit zaman kanak-kanak.

STUDY THE IMPACT OF ACADEMIC DETAILING ON CHILDHOOD DIARRHEOA MANAGEMENT TO THE PRIMARY HEALTHCARE PROVIDERS IN NEPAL

ABSTRACT

Childhood diarrhoea is common in Nepal. Studies had reported poor knowledge and irrational prescribing practice among healthcare professionals for childhood diarrhoea management. Academic detailing had been used to promote rational prescribing in many developed countries, but uncommon in developing countries like Nepal. With this background, a prospective interventional study was conducted in Banke district of Nepal to evaluate the impact of academic detailing on childhood diarrhoea and its management to the randomly divided 235 primary healthcare providers. Data on knowledge, attitude and practice were collected with the help of validated semi-structured questionnaire; and data on prescribing pattern was collected with the help of simulated clients. At baseline, Knowledge (K) score, Attitude (A) score, Practice (P) score and Total KAP score for the participants in control group were 7, 38, 26 and 71, respectively which was not significantly different than the participants of intervention group. K-score, A-score, P-score and KAP-score for the participants in intervention group were 7, 37, 25 and 70, respectively. However, it improved significantly in participants of intervention group during first and second follow up phases of the study. The K-score, A-score, P-score and KAP-score of the participants during first follow up among the participants in control group were 8, 38, 26 and 71 respectively, whereas for

participants in intervention group were 11, 40, 31 and 83, respectively. At second follow up, K-score, A-score, P-score and KAP-score for participants in control group were 8, 35, 24 and 67, respectively and those of participants in intervention group were 10, 37, 28 and 79, respectively. The academic detailing also significantly improved the prescribing pattern among the participants in intervention group compared to the control group. At baseline, only 6.0% of the participants in control group and 8.3% in intervention group were adhering to the childhood diarrhoea treatment guidelines, which significantly increased among the participants in intervention group (65.1%) than control group (16.0%) at first follow up. At second follow up, 69.7% of participants in intervention group were adhering to the guidelines, which was significantly greater than control group (19.0%). The cost of prescription was significantly low in participants in intervention group than control group during first and second follow up phases. In conclusion, academic detailing significantly improved knowledge, attitude and practice of participants regarding childhood diarrhoea and its management. It also significantly improved the prescribing pattern, increased adherence of participants towards clinical guidelines and decreased the prescription cost to treat childhood diarrhoea.

CHAPTER 1

GENERAL INTRODUCTION

1.1 Background

Nepal is a developing country in South Asia situated between two big nations- India in south, east and west, and China in the north. The total area of Nepal is 147,181 square kilometers with large geographical variations- the mountains in the north, the hills in the middle and the flat lands in the south. It has population around 29 million (MoHP, 2010a). Data of year 2008 suggested total adult literacy rate of Nepal was 57 percent and gross national income (GNI) per capita income was United States Dollar (USD) 400. It also reported poor health indicators. The average expectancy at birth was 67 years, under five years mortality rate was 51 and infant mortality rate was 41 (UNICEF, 2010).

The morbidity and mortality is high in Nepal especially among women and children. There has been higher prevalence of acute preventable childhood diseases like diarrhoea, pneumonia; complications of child birth and nutritional disorders. The endemic diseases such as malaria, tuberculosis, leprosy and other viral diseases also prevail at a high rate (MoHP, 2010c). Determinants of those morbid conditions are associated with persistent poverty, low literacy rates, poor mass education on health, difficult geographical condition and inadequate healthcare infrastructure within the country. There is inadequate hygiene and sanitary facilities and a limited availability of safe drinking water. These problems are further worsened by under-utilization of available resources; shortages of adequately trained healthcare providers; poor public sector management; and weak intra-

and inter-sectoral co-ordination (MoHP, 2010a).

The Ministry of Health and Population (MoHP) is the governing body of healthcare system within Nepal. Under MoHP, there are three different departments namely- Department of Health Services (DoHS), Department of Ayurveda and Department of Drug Administration (DDA). DoHS is responsible to deliver preventive, promotive and curative health services throughout the country. Department of Ayurveda is responsible for all the activities related to the traditional ayurvedic therapy and similarly DDA is responsible for all the regulatory and issue related to control of medicines within the country (DoHS, 2009).

The institutional framework of DoHS consists of five regional health directorates at the top of the hierarchy in healthcare system. Under these regional health directorates there are 10 zonal hospitals at zone level. At district level, there are altogether 15 district public health offices, 65 district hospitals and 60 district health offices. Below this hierarchic level there are 210 primary healthcare centers/ health centers (PHCC), 676 health posts (HP) and 3,134 sub health posts (SHP) throughout the country (DoHS, 2009). According to the institutional framework of the DoHS, the sub health post is the first contact point for basic health services. Each level above the SHP is a referral point in a network from SHP to HP to PHCC, on to district, zonal and regional. This referral hierarchy has been designed to ensure that the majority of population receives public health and minor treatment in places accessible to them and at a price they can afford. Beside these, there are so many private hospitals and dispensaries from where primary healthcare service is

provided (MoHP, 2010b). The diagrammatic representation of Nepal's national healthcare system is shown in the Figure 1.1

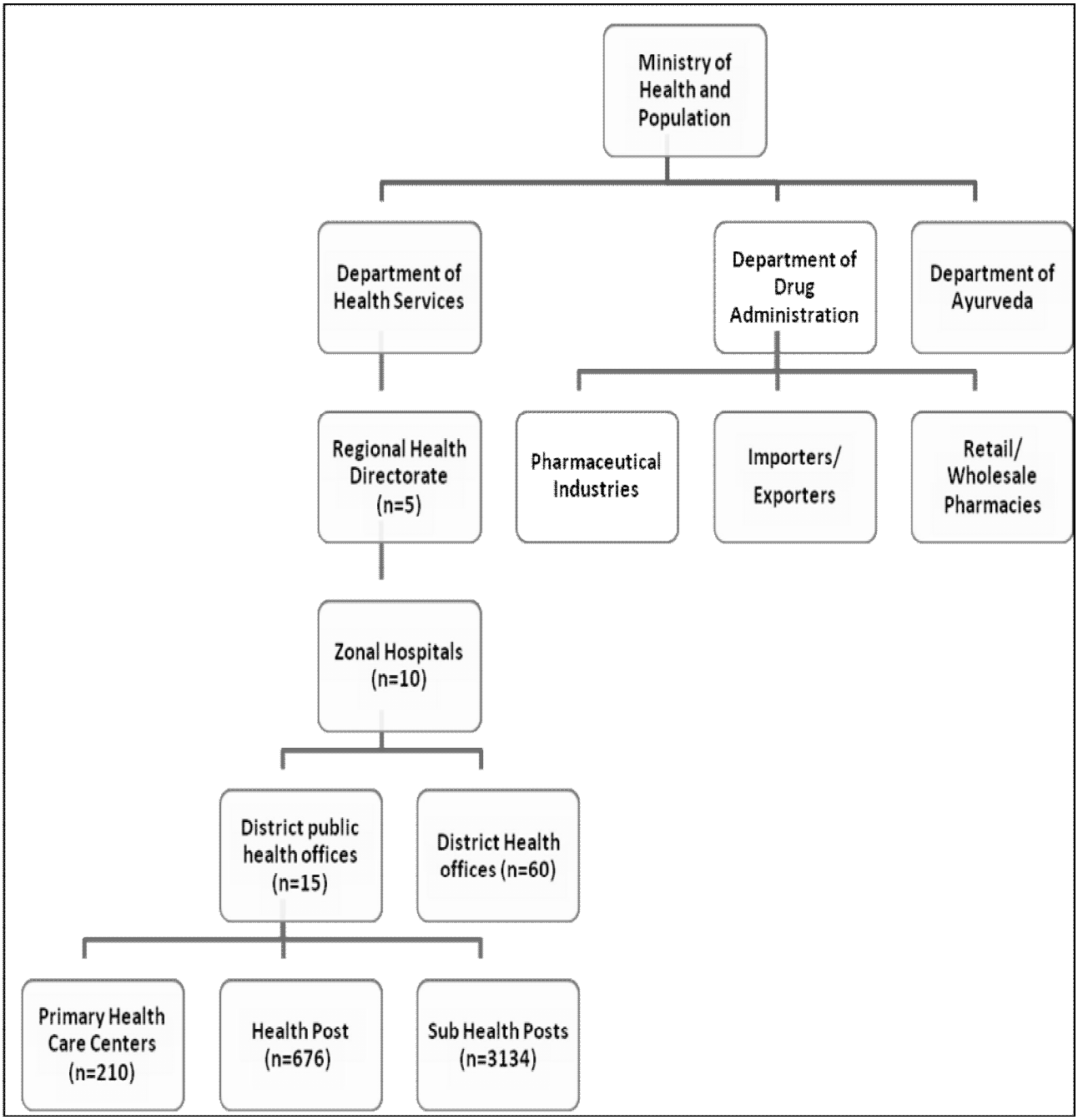

Figure 1.1 Healthcare system of Nepal

Most of the healthcare workers working at primary care level are health assistants (HA), auxiliary health workers (AHW) and assistant nursing midwifery (ANM), especially in rural areas. The people are paramedical people who are diploma holder on the related subjects. These people have legal right to prescribe the medicine for primary care. In addition to this, most of the doctors are concentrated on the urban areas because of inadequate professional development services, lack of supplies, subordinates and studies opportunities in rural part (Rai et al., 2001). Hence, the people with the qualification of HA, AHW and ANM become the major source of primary healthcare services to the majority of people in Nepal. These primary healthcare providers may be important stakeholders to promote the rational use of medicine in the Nepalese setting. National Drug Policy was promulgated in Nepal in order to maintain safeguard and promote the health of people inside the country. One of the objectives of National Drug Policy of Nepal is to promote the rational use of medicines within the country (DDA, 2010b). The rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their own requirements, for an adequate period of time and at the lowest cost to them and their community (WHO, 2001). Examples of irrational use of medicines include polypharmacy, inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections; over-use of injections when oral formulations would be more appropriate; failure to prescribe in accordance with clinical guidelines; inappropriate self-medication, often of prescription-only medicines; non-adherence to dosing regimen (WHO, 2010).

The modern world cannot rely on the treatment based on the clinicians' individual opinions and experience alone; instead there is demand for scientific evidence and this has given rise to the concept of evidence based practice. Evidence based practice is one of the important aspect of rational use of medicine. It is defined as 'the practice of using the most current research information to guide clinical decisions, while also fully taking into consideration the patient's values and circumstances' (Cardarelli and Seater, 2007). From this definition, it is clear that source of reliable and unbiased scientific evidences are vital to promote the concept of evidence based practice. In such circumstances, academic detailing can play vital role in providing reliable and unbiased drug information. Academic detailing had been used for the first time in US in year 1983 as a tool to improve the practice of clinicians by providing accurate and unbiased drug information (Avorn and Soumerai, 1983).

Academic detailing is an educational outreach program in which a trained health professional visits clinicians in their offices to provide evidence based information (Kondro, 2007). The process involves face-to-face education of clinicians by trained academic detailers. The academic detailers are usually healthcare professionals like pharmacists, clinicians, nurses or any trained people on the subject matter (Avorn and Soumerai, 1983). The basic objectives of the academic detailing program is to increase the knowledge of the clinicians on particular topic, change prescribing of targeted drugs to be consistent with medical evidence, provide medical care in cost effective way or to minimize the patient risks due to wrong practice (Soumerai and Avorn, 1990; Ross-Degnan et al., 1996; Schlienger et al., 1999; Boothby et al., 2003). It is like a

pharmaceutical representative visiting a clinician, except that the information provided is evidence-based. The information provided to the clinicians is out of economical interest unlike pharmaceutical detailing which is narrowly targeted to promote the sales of particular medical product. The information provided by pharmaceutical representative may not provide the negative aspect of their product, so the clinicians may be in higher risk to get biased information from them (Topol, 2004; Giri and Shankar, 2005). The information provided by academic detailers is based on extensive literature survey and its critical appraisal. Usually, it is given on one-one basis; however, in some cases it can be given to small group of clinicians with similar type of clinical background (Markey and Schattner, 2001).

1.2 Problem statement

Infection of upper respiratory tract and childhood diarrhoea are the two most leading causes of mortality and morbidity in Nepal and has been listed as the major health research priority areas of Nepal (NHRC, 2010). MoHP has special program to combat with this problem. They have program called Control of Diarrhoeal Disease (CDD) under Community Based Integrated Management of Childhood Illness (CB-IMCI) project. Though substantial control on child death due to diarrhoea has been achieved, annual Report (2007/2008) published by DoHS reported the higher prevalence of diarrhoea among the children under five years of age. Rate of childhood diarrhoea incidence was reported as 377.89 per thousand children. It also reported that the 206 children under age of five years died due to diarrhoeal diseases and total 2121 cases are referred to higher center from the primary healthcare providing centers during whole period within the

country (DoHS, 2009).

Dehydration is one of the most important consequences of diarrhoea. It can be fatal if not treated in time. Oral rehydration therapy (ORT) is the best method to combat dehydration associated with diarrhoea. ORT combines the use of oral rehydration solution (ORS), a balanced oral solution of electrolytes and carbohydrates which with early feeding restores and maintains fluid and nutrient status of the body (Duggan et al., 1992). ORS has been best tool to combat deaths related to dehydration since longer time. Worldwide data suggested that after the adoption of ORS in 1978 the mortality rate of children under the age of five decreased from 4.5 million deaths annually to 1.8 million in year 2000 (UNICEF, 2007). Low osmolarity ORS improves the efficacy of ORS, reduces the need for unscheduled intravenous infusions, lowers stool volume, and causes less vomiting compared with previously recommended ORS (Hahn et al., 2002). Hence, in order to reduce the mortality rate, WHO/UNICEF jointly recommended new ORS formulation with low glucose and sodium content to manage the diarrhoea. Along with new ORS formulation WHO/UNICEF also recommended zinc supplement (especially to children under 5 years of age) during the management of diarrhoea. ORS along with zinc supplementation given at a dose of about 10-20 mg for 14 days is efficacious in reducing the severity of diarrhoea and the duration of the episodes significantly (WHO, 2004). Despite many beneficial aspects of ORS in many cases of diarrhoea, it has been underutilized in many cases. Instead of that we can find the cases where antibiotics, intravenous fluids and vitamin supplements being the first line therapy for such patients in many developing countries (Kumar et al., 2008; Larson et al., 2009). This suggests that

there is requirement of educational and behavioral intervention to improve the utilization of ORS among the community.

1.3 Literature review

1.3.1 History and development of the oral rehydration salts

There was outburst of cholera in Russia and Western Europe during the late 1820s which caused large number of deaths; dehydration secondary to cholera was the major cause of death. Shaughnessy for the first time noted the loss of water and salt in stools of cholera patients and recommended intravenous fluid therapy to compensate the loss in diarrhoea (Foex, 2003). Use of hypertonic intravenous fluid decreased the mortality rate of cholera reduced from 70% to 40% (Guerrant et al., 2003).

Research done in the 1950s suggested that glucose and sodium both are transported across the gastrointestinal epithelia together. This established the physiological concept for the development of ORS for human use. Sodium along with sugar can be given orally to supplement the loss of sodium during diarrhoea. It was demonstrated that other organic molecules, such as amino acids, dipeptides, and tripeptides, can contribute to this cotransport phenomenon. With this basis, many researches were conducted and ORS was developed for the first time by scientists in Bangladesh and India (Nalin et al., 1968; Pierce et al., 1968). But in human, for the first time effectiveness of ORS was established in Taiwan by Phillips while treating the patient during cholera outbreak (Ruxin, 1994). Since then the use of ORS become popular in short span of time.

1.3.2 Importance of oral rehydration salts and zinc in diarrhea

In the year 1971 during Indo-Pakistan war, there was cholera pandemic in refugee camps. During that time the mortality rate due to cholera was only 3% in the population who were using ORS and on other hand there was mortality rate of 20%- 30% among those who were using only intravenous fluid (Bhattacharya, 1994). Similarly after 1978, from the time when WHO/UNICEF adopted ORS as the primary tool to fight diarrhoea related child death, the under five mortality rate due to diarrhoea has decreased from approximately 4.5 million to two million deaths annually (UNICEF, 2007). Based on this statistic, we can say that ORS is one of the important discoveries of the 20th century.

Though very good success has been achieved by the use of ORS, two million deaths annually due to diarrhoea can still be considered statistically significant. One scientific research reported that the low osmolarity ORS improves the efficacy of ORS, it reduces the need for unscheduled intravenous infusions, lowers stool volume, and causes less vomiting compared with previously recommended ORS (Hahn et al., 2002). With that framework WHO/UNICEF jointly recommended new ORS formulation with low glucose and sodium content to manage the diarrhoea. Along with new ORS formulation WHO/UNICEF also recommends zinc supplement (especially to children under 5 years of age) during the management of diarrhoea (WHO, 2004). Though molecular mechanism of the effectiveness of zinc supplements in diarrhoea is not known however many randomized controlled trial studies revealed that ORS along with zinc supplementation given at a dose of about 10-20 mg for 14 days was very effective in reducing the severity of diarrhoea and the duration of the episodes significantly

(Laaaerini and Rofnani 2008; Aggarwal et al., 2007; Fontaine, 2001; Bhandari et al., 2002).

1.3.3 Knowledge and practices to treat childhood diarrhea

Use of ORS may vary with the availability, affordability and knowledge about the diarrhoea and ORS. The study from Bangladesh reports the underutilization of ORS for diarrhoeal patients in the community (Larson et al., 2009). Similarly, another community based interventional study done in Bangladesh reported that diarrhoea treatment education and easy community access to zinc and ORS among caregivers was associated with reduced diarrhoea morbidity and overall mortality in children. It also decreased the use of antibiotics and intravenous fluids in case of diarrhoea (Baqui et al., 2004). Studies from India also reported the cases of underutilization of ORS among the Indian children suffering from diarrhoea. They reported injectables, antibiotics and vitamins were more oftenly used than ORS in case of childhood diarrhoea (Kumar et al., 2008; Larson et al., 2009).

A study from eastern district of Nepal suggests that the dispensers at community pharmacies are the first point of treatment for childhood diarrhoeal diseases. It also suggests that they had inadequate knowledge about diarrhoea and its management (Das et al., 2005). Another study from the same district of Nepal also showed that there is poor knowledge about ORS and childhood diarrhoea management among the mothers of children (Jha et al., 2006). With these backgrounds, Ansari *et al.* had identified that there is great role of mothers in the management of childhood diarrhoea in Nepal (Ansari et al., 2009). These all suggest that the knowledge on diarrhoea and ORS is very poor in Nepal,

educational and behavioral interventions are required at the community and healthcare institutional level.

1.3.4 Status of medicine information services in Nepal

In the year 1995, the National Drug Policy of Nepal for the first time, emphasized the dissemination of accurate and unbiased drug information within the country. To fulfill this objective, the Drug Information Network of Nepal (DINoN) was established on November 23, 1996. The mission of DINoN was to develop and disseminate drug information among the members. At present, there are nine drug information centers in Nepal which are members of DINoN. Though more than one and a half decade has been already been spent, there has been no increase in the number of members of DINoN (DDA, 2010a) The activity of a drug information center (DIC) in one of the teaching hospitals in western region of Nepal is commendable. It provides drug information services to clinicians and other healthcare professionals, medication counseling services to patients and their parties, runs a pharmacovigilance center, provides continuing education programs and works on promotion of rational use of medicines inside the hospital (Palaian and Khanal, 2008). The teaching hospital of one of the medical colleges in Nepal is running DIC as a pilot project to see the feasibility, and possible problems and solutions. The high cost of establishing DIC and its operational costs are the hindering factors (Shankar et al., 2009a).

Though the scenario of drug information services is improving in Nepal, the rate of progress is very slow. Within the last five years, there has not been an appreciable

increase in the number of drug information centers associated with DINoN. Limited availability of new literature and poor documentation and dissemination of the little available information, are the main limitations for drug information services in Nepal (Joshi, 1997). This makes the most of the healthcare providers especially those in primary care settings inaccessible to the unbiased source of medicine information. In such case the information provided by pharmaceutical representative on such case may become sole source of medicine information to them (Giri and Shankar, 2005). This suggests that there is a great need of some source of unbiased medicine information to the healthcare providers for their clinical practice.

1.3.5 Impact of academic detailing on knowledge, attitude and behavior of healthcare professionals

Few studies done worldwide had demonstrated the improvement on knowledge, attitude and practice of healthcare professionals after the academic detailing (Ross-Degnan et al., 1996; Markey and Schattner, 2001).Two controlled trial studies conducted in Kenya and Indonesia had found the significant improvement in knowledge and performance of pharmacist regarding the diarrhoea treatment. The study had evaluated the short-term impact of this intervention using a before-and-after comparison group design in Kenya, and a randomized controlled design in Indonesia, with the pharmacy as unit of analysis in both countries (n = 107 pharmacies in Kenya; n=87 in Indonesia) (Ross-Degnan et al., 1996). Similarly, other randomized study conducted among 132 general physicians in Australia over three months suggests that the academic detailing led to a significant improvement in knowledge scores and self-perceived understanding of evidence based

medicine, but had little influence on attitudes toward it (Markey and Schattner, 2001). Studies concluded that thorough discussion of a topic during academic detailing can improve the knowledge, attitude and practice of healthcare providers. However, in some cases, it will be very difficult to attain change in behavior, so some reinforcement program parallel to academic detailing will be more beneficial.

1.3.6 Impact of academic detailing on prescribing behavior

A meta-analysis of 69 studies done in the year 2007 demonstrated that academic detailing can significantly improve the prescribing behavior of healthcare professionals (O'Brien et al., 2007). There was high usage of meperidine in a teaching hospital of United States (US). Meperidine is an opoid analgesic not recommended as first line treatment for pain management due to its safety and efficacy concern. Academic detailing was used as educational intervention to decrease the usage of meperidine to the medical residents, pharmacists and nurses in the hospital. After the intervention, there was marked decline in the usage of meperidine in that hospital (Boothby et al., 2003). Randomized control trial from Sweden reported marked improvement in prescription pattern of antipsychotics and benzodiazepines to the elderly patients after academic detailing was provided to the 15 general physicians (Midlov et al., 2006). Similarly, another study from Spain has demonstrated the positive impact of academic detailing on prescribing pattern of nonsteroidal anti-inflammatory drugs (NSAIDs) (Bernal-Delgado et al., 2002). These suggest academic detailing is powerful enough to influence the prescribing behavior of the clinicians. It can be used as a tool to improve the prescribing practices of the clinicians.

1.3.7 Academic detailing as a tool to introduce or promote clinical guidelines

Translating guidelines into practice has been the problem in health sciences. Academic detailing can be used as one of the interventional program to increase the clinicians' adherence to the guidelines (Davis and Taylor-Vaisey, 1997). Academic detailing has been successful in increasing clinicians' adherence to the guidelines. A randomized control trial conducted in Australia stated that the clinician's adherence to the antibiotic guidelines was increased after the academic detailing. In the study academic detailing remarkably decreased the number of antibiotic prescription and total treatment cost for the patients (Ilett et al., 2000). Similarly, in another study conducted in a hospital in US, academic detailing was useful in implementing new guidelines for treating the hypertension. After academic detailing, there were more adherences of the clinicians toward the given guidelines (Carter, 2004). Therefore, academic detailing can be used as informational or educational intervention to facilitate the implementation of clinical guidelines.

1.3.8 Status of academic detailing in developing countries and in Nepal

There were few literatures regarding the practice of academic detailing in developing countries. In year 1996, academic detailing had been used as the educational intervention to promote rational use of medicine to treat the diarrhoeal children in Kenya and Indonesia. Simulated clients were used to collect the prescribing behavior study. After academic detailing, there was marked improvement increase on the use of ORS, and decrease in number of other unnecessary medicines for childhood diarrhoea (Ross-Degnan et al., 1996).

The department of clinical pharmacology and therapeutics of a medical college in Nepal is regularly conducting academic detailing sessions to the clinicians in the hospital affiliated to their medical college. The sessions covered a broad range of medical topics. After one year of experience with academic detailing, initial feedback from the participants was positive. Currently, these sessions are conducted in a large group format consisting group of clinicians. However, the department was studying the feasibility of providing academic detailing sessions to a small group of clinicians (Shankar et al., 2009b). Apart from these, there were no literatures from developing countries on Medline database suggesting that academic detailing is not popular in developing countries compared to developed countries.

1.3.9 Perception of healthcare professionals toward academic detailing and its acceptance detailing

Academic detailing sessions with evidence based information are known to be more effective than other conventional educational sessions (Davis and Taylor-Vaisey, 1997). The clinicians' perception about the academic detailing can be vital to bring behavioral change in them. The studies done on the perception of clinicians toward academic detailing suggested that the clinicians appreciated academic detailing as a good means to update their knowledge (Habraken et al., 2003; Shankar et al., 2009b).

In a randomized controlled study conducted in Belgium, clinicians highly rated academic detailing visits and approximately 90% of those who used academic detailing wished to use it again (Habraken et al., 2003). Similarly, clinicians valued academic detailing as an

important source to get evidence based information and also some found despite of valuable information, it is time- consuming (Allen et al., 2007). Shanker *et al.* reported that the initial feedback of clinicians towards the academic detailing is quiet positive among the clinicians in a teaching hospital of Nepal (Shankar et al., 2009b). From the studies, we can conclude that academic detailing is well accepted by the participants however, focus should be made to make it concise by decreasing the duration of sessions.

1.3.10 Economic feasibility and sustainability of academic detailing

Since academic detailing had been started for the first time in 1983 in US, many developed countries like US, Canada, Sweden and Australia adopted the program and they currently have good academic detailing centers and programs in their settings (Daly et al., 1993; Lundborg et al., 1997; Kondro, 2007; Pulver et al., 2009). Two economic analyses of existing academic detailing programs in US had found them to be cost-effective. The economic outcomes of the program were more in comparison to the operating cost of the academic detailing program (Soumerai and Avorn, 1986; Mason et al., 2001; Gandjour and Lauterbach, 2005). However, one article reported that one academic detailing center in Canada was closed and some were in the verge of closing, because expected outcomes were not profitable when compared to the investment suggesting that lack of economic strength can be one of the major limitations for academic detailing center (Kondro, 2007).

Though there are documentation regarding the long history and good practice of academic detailing in developed countries, only few studies are documented from

developing countries. Therefore, the economic feasibility and sustainability of academic detailing in developing countries is still a matter of research.

1.4 Justification and importance of the study

Childhood diarrhoea is one of the major research priorities of Nepal (NHRC, 2010). Two cross-sectional studies showed inadequate knowledge about childhood diarrhoea among the pharmacist and the mothers regarding the childhood diarrhoea in the eastern district of Nepal (Das et al., 2005; Jha et al., 2006). There is lack of study regarding the childhood diarrhoea in Nepal. However, the studies from neighboring countries like India and Bangladesh showed the underutilization of ORS during diarrhoea. These studies also suggested that instead of ORS- intravenous fluids, antibiotics and other medicine preparations were considered as a primary treatment for childhood diarrhoea (Adhikari et al., 2006; Jha et al., 2006; Qidwai et al., 2006; Haque et al., 2004; Singh et al., 2002; Larson et al., 2009).

Zinc was recommended by WHO/UNICEF in the year 2004 (WHO, 2004). It was introduced in Nepal in the year 2008 (USAID, 2009). As zinc being newly introduced medicine, there might be maximum chance the primary healthcare providers may not have adequate information regarding the zinc therapy. These all make childhood diarrhoea an important area for educational and behavioral intervention.

On the other hand, there is not reliable source of drug information to the healthcare providers in Nepal. One can hardly find good reference books and other unbiased source of drug information with them (Chhetri et al., 2008; Poudel et al., 2009). Due to the

increase in number of pharmaceutical companies, the healthcare professional in Nepal are in high risk of receiving biased information from their pharmaceutical representatives (Giri and Shankar, 2005). Therefore there is requirement of unbiased source of drug information to the healthcare professionals. The selection of academic detailing as an educational tool to provide unbiased drug information to the healthcare professional for their clinical decision making has good rationale because academic detailing has been already used in many countries and was considered to be reliable source of unbiased drug information.

The study is also really important because this is the first of its type in Nepal and is among very few of the studies in developing countries. This study gives an idea about the feasibility of the implementing academic detailing activities in resource limited settings like Nepal.

1.5 Research questions

The overall study was carried out with the following research questions:

a) What will be the impact of academic detailing on the knowledge, attitude and practice of primary healthcare providers in Banke district of Nepal regarding childhood diarrhoea and its management?

b) What will be the impact of academic detailing on the prescribing pattern, compliance of healthcare providers towards childhood diarrhoea treatment guidelines and cost of

prescription to treat diarrhoeal child among the primary healthcare providers in Banke district of Nepal for the treatment of childhood diarrhoea with no dehydration?

1.6 Research hypotheses

Following hypothesis were made based upon our research questions prior conducting the study:

a) Academic detailing improves the knowledge, attitude and practice of primary healthcare providers in Banke district of Nepal regarding childhood diarrhoea and its management.

b) Academic detailing improves the prescribing prescribing pattern of primary healthcare providers in Banke District of Nepal for the treatment of childhood diarrhoea with no dehydration?

c) Academic detailing improves the compliance of of primary healthcare providers towards childhood diarrhoea treatment guidelines in Banke district towards the childhood diarrhoea treatment guidelines.

d) Academic detailing reduces the overall cost of management of childhood diarrhoea with no dehydration.

1.7 Study objectives

The present study was conducted based on the following general and specific objectives:

1.7.1 General objective: The general objective of this study was to introduce academic detailing in developing countries to promote rational use of medicines by providing evidence based medicine information.

1.7.2 Specific objectives

The general objective of the study was achieved through following specific objectives:

a) To evaluate the impact of academic detailing on knowledge, attitude and practice of primary healthcare providers in Banke district of Nepal regarding childhood diarrhoea and its management.

b) To evaluate the impact of academic detailing on prescribing pattern of childhood diarrhoea without dehydration among the primary healthcare providers in Banke district of Nepal.

c) To evaluate the impact of academic detailing on the compliance of primary healthcare providers towards the diarrhoea treatment guidelines for the management of simple diarrhoea with the help of pre- and postintervention data.

d) To evaluate the impact of academic detailing on the prescription cost to manage the child suffering from simple diarrhoea among th primary healthcare by with the help of pre- and postintervention data.

1.8 Significance of the study findings

The overall study findings had following contributions:

1) Baseline data regarding knowledge, attitude and practice from questionnaire based study gives the idea about current status of primary healthcare providers regarding childhood diarrhoea and its management. This will help the agencies like professional associations, government authorities and continuing medical education centers on designing educational materials related to childhood diarrhoea management.

2) The comparative data among the control and intervention groups at various phases of the study gives idea whether academic detailing was successful in improving knowledge, attitude and practice of participants or not. If successful, this will suggest academic detailing is feasible in the Nepalese setting and this will be the first study in Nepal evaluating the impact of academic detailing on knowledge, attitude and practice among the primary healthcare providers in Banke district.

3) The baseline data on the prescribing pattern will give idea about the status of rational use of medicine in management of childhood diarrhoea among the primary healthcare providers in Banke district of Nepal. This will give primary healthcare providers,

patients, professional organizations, policymakers idea about the adherence of primary healthcare providers towards the childhood diarrhoea treatment guideline.

4) The evaluation of impact of academic detailing on prescribing pattern suggests whether academic detailing can promote rational use of medicine in the primary healthcare level or not. If successful the model can be taken by policy makers to the other districts of Nepal. Even academic detailing can be considered as good means to enforce other type of clinical practice guidelines.

5) The most important significance of the study findings will be whether academic detailing can be feasible in resource limited countries like Nepal or not. This will be first type of the study evaluating the impact of academic detailing in Nepal.

CHAPTER 2

GENERAL METHODOLOGY

2.1 Study design

It was a prospective interventional study to evaluate the impact of academic detailing on the childhood diarrhoea treatment among the primary healthcare providers in Banke district of Nepal. This study consisted of four different academic detailing sessions. The study applied the use of semistructured questionnaire to evaluate the knowledge, attitude and practice; and simulated clients to evaluate the prescribing pattern.

2.2 Study duration and site

The study was carried out from July 2009 to March 2010. The study was carried out in the Banke district of Nepal. Banke district lies in the Midwestern region of Nepal. It is a plain flat land adjacent to border of India. The urban part of the district consists of one 300 bedded government hospital, two 100 bedded private hospitals, one 150 bedded nursing home and one 550 bedded tertiary care teaching hospital, whereas the rural part consists of primary healthcare centers, health post and sub health posts. Both urban and rural part of this district is facilitated with private practitioners especially having their clinic inside some pharmacies. This district is known to be one of the susceptible district for childhood diarrhoea and Ministry of Health, Government of Nepal have Control of Diarrhoeal Disease (CDD) program under Community Based Management of Childhood Illness (CB-IMCI) project to combat with the childhood diarrhoea problem in this district.

2.3 Study population

The study population were the people in the Banke district who had legal rights to prescribe the medicines and working on the primary healthcare settings and pharmacies. These include the people with the qualification of health assistant (HA) with three years of formal education after 10 years of schooling, community medical assistant (CMA) with 15 months of formal training after 10 years of schooling, auxiliary health worker (AHW) and assistant nursing midwifery (ANM) with 18 months of formal training after 10 years of schooling. There were altogether 74 eligible government practitioners and 181 eligible private practitioners in the Banke district. Out of total population, excluding drop outs and uninterested participants, total number of population considered in Chapter 3 is 204 and for Chapter 4 is 209.

2.3.1 Inclusion criteria

The inclusion criteria included healthcare providers who were working in the government sub health post (SHP), health post (HP) and primary healthcare center (PHCC), and those eligible healthcare providers who were practicing in any pharmacy which is registered in Department of Drug Administration.

2.3.2 Exclusion criteria

The study excluded the following individuals:

a) Those people who were working in pharmacies but not have legal right to prescribe the medicine.

b) Those practitioner who were working in their home-based setting (neither government institution nor the registered pharmacies)

c) The people who were working on both private and government settings were taken as government practitioner only. The interventions were carried out on them in government setting and data from them were also collected from the same setting.

d) Ten practitioners who were the participants in the pilot study.

e) Those who were not interested and refused to participate in the study.

2.4 Study sample

Stratified randomized sampling was done to the population. Whole populations were divided into two different types of strata. The whole method of sampling is shown in Figure 2.1.

2.4.1 Method of randomization

The population in two different types of strata- government and private organization were systematically randomized (Bowling, 2002). In case of government healthcare providers the list of the healthcare providers working on SHP, HP and PHCC were obtained from district public health office. The names given by the office were already assigned by district public health on the numeric order. All the health workers having odd numbers were kept as intervention group and those with even number were kept as control group.