

CHAPTER II

ESSAY

Introducing Standard Treatment Schedule through face-to-face Education: A way to improve prescribing practices at BRAC Health Centers

2.1 Introduction

The main issue in this essay is how can prescribing practices of the prescribers of BRAC Health Center (BHC), non-governmental health care facilities in the rural areas in Bangladesh, be improved. Rational prescribing, which is one of the concepts of Rational Use of Drugs, is the concern of this essay. Bangladesh faces scarcity of financial resources to provide health care for its 124 million populations (Bangladesh Bureau of Statistics, 1997). People in the rural areas, which comprises 85% of the total population, live in poor socio-economic condition, with poor water supply, sanitation and poor accessibility to health care facilities (Islam, Martinussen & Rifkins, 1997); thus promoting rational use of drugs is very much essentials in the health care system.

There is a widely held belief in many countries that health care deliveries by non-governmental organizations provide better quality health care, but this may not be true in case of Rational Use of Drugs. Empirical evidences have not validated this belief; however, one study was done by Research and Evaluation Division of BRAC concerning the quality aspect of the health centers. Although the study did not touch any of the arena of Rational Use of Drugs but figured out that prescribers rarely uses

the management guideline of BHC, which also includes a list of drugs and drug formulary. The author recommended that emphasis on rational drug use would be considered to minimize unnecessary drugs prescribed by the prescribers (Afsana, Mahmood, Chowdhury, Karim & Khan, 1997).

The principles of Rational Use of Drugs involve safe and effective use and restriction to the minimum required drugs in managing the disease. Adherence to this principle necessities in improvement in the availability to save scarce resources, an improvement in the prescribing pattern of the health personnel and better self use of drugs by the patient. After the Experts committee meeting in Nairobi in 1985 on the Rational Use of Drugs (WHO, 1993) a lot of work has been done to the improvement of drug use practices. A critical component of this drive has been the concern of developing objective indicators that can measure the performance of health care providers in several key dimensions related to the appropriate use of drugs. The core drug use indicators (please see annex-IX for WHO indicators) are highly standardized, do not need any national adaptation and is tested in the developing countries (WHO, 1993).

Other facets of the Rational Use of Drugs lie on dispensing (related to the patient care indicators), availability of drugs (related to the facility specific indicators) and consumption by the patient (Chitr, 1997). An evaluation of WHO global Action Programs on Essential Drugs showed that in Bangladesh supply and availability of essential drugs has improved, but there still problems in the prescribing of drugs at all levels of the health care systems (Kanji & Hardon, 1992). One of the problems of prescribing practices is the treatment of acute watery diarrhea in children under 5

years of age where the use of ORS (oral rehydration salt) is very low. It was found that in 1995 ORS use rate was about 46% (BBS & UNICEF, 1997), while other drugs that do not have proven efficacy, such as antibiotics or anti-amoebic drugs were prescribed. So, using standard treatment schedule that is accepted, recommended and proved effective in the treatment of acute watery diarrhea and training on that among prescribers of BHC can minimize the irrational prescribing; hence promote rational use of drugs.

By using standard treatment and training on it, many of the programs have been operating successfully by BRAC in Bangladesh. The examples of these are, community based TB control program and community based ARI control program. After the implementation of the programs and to train employees on the use of STS, those two programs are functioning well in BRAC setting. During 1996-1997, 2,917 and 2,309 cases were treated according to standard treatment schedule. The cure rate in TB control program was 86% (1996-97), which has increased from 73% (objective is 90% by the year 2000). In 1996, 55,141 ARI cases were treated according to STS and the cure rate in ARI control program was 99% (1996), already superseded the targeted cure rate of 85% (Reproductive Health & Disease Control Program, 1996, 1997).

2.2 Problem with the treatment of childhood diarrhea

2.2.1 Situation in Bangladesh

The problem with the treatment of acute watery diarrhea is common worldwide especially in the South East Asian region including Bangladesh. Many

studies found irrational prescribing behavior in the treatment of diarrheal diseases among the prescribers especially in the privately practicing practitioners (Chowdhury et al. 1995; Ronsman et al., 1996; Baqui et al., 1996). A study carried out in Bangladesh illustrated that the most common error in the treatment of diarrheal diseases were the use of multiple and inappropriate antibiotics and failure to recommend the use of ORS (Cash, 1996). Despite the door to door campaign carried out by BRAC through 1980 to 1990 which covered 13 million households in Bangladesh to educate mothers about ORT (oral rehydration therapy) in the treatment of diarrhea (BRAC, 1994); the ORT use rate still lies below 50% (BBS & UNICEF, 1997). Roy Chowdhury found other studies that were carried out recently provide many specific examples of irrational or inappropriate prescribing practices stated below:

Covering 80 facilities throughout the whole country in 1992 a survey illustrated that in Bangladesh 25% of the patients were prescribed antibiotics related for six common diseases (watery diarrhea, dysentery with blood, helminthiasis, pneumonia, acute respiratory tract infection and scabies). The study also found a high rate of use (17%) of Metronidazole, particularly when it was not recommended for any of the conditions mentioned above (UNICEF, 1993).

Another study of public health facilities in 1990 also illustrated that antibiotics were prescribed unnecessarily in 23% of watery diarrhea cases, and only 46% of the patients with dysentery received an appropriate antibiotic. The study also found that 78% of the rural practitioner said that they used antibiotics in all cases of diarrhea (UNICEF, 1992).

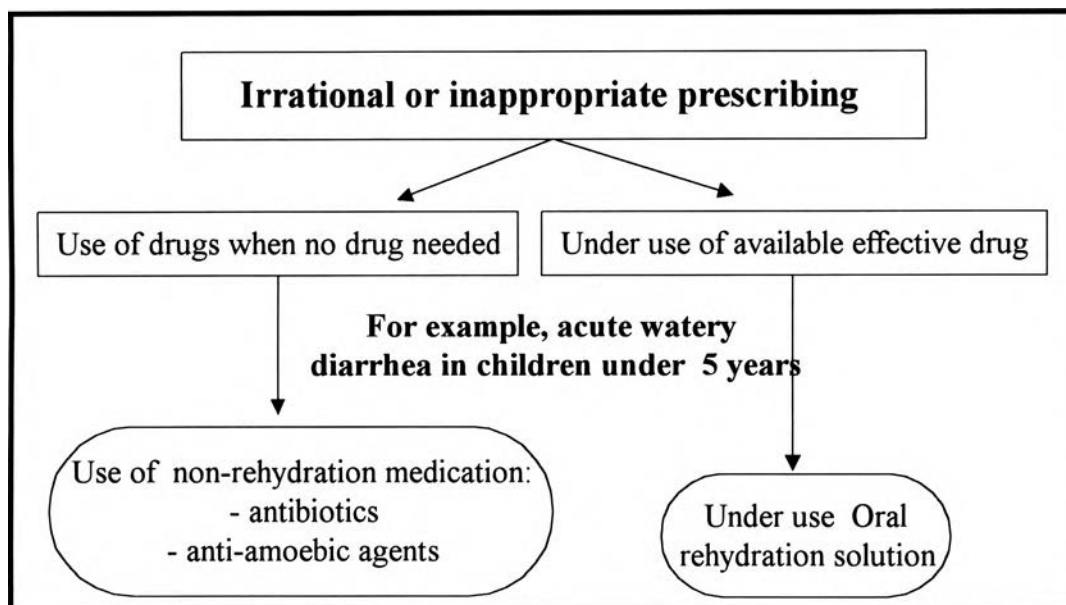
The other study comparing the public hospital and private practitioner's practices in the treatment of diarrhea in children in 1990 found that nearly two-thirds used antibiotics (UNICEF, 1993). Thus emphasis must be placed on rational use of drugs to minimize unnecessary use of antibiotics and other medicines as practiced by medical doctors and paramedics of BHC (Afsana, 1997).

So, there is a little doubt that there is considerable inappropriate: wrong type, too many, too much use of antibiotics, anti-microbial and other drugs in Bangladesh. At the same time there is under use of ORS and other antibiotics also. Perhaps every health worker or researcher in the health field is able to cite incidents where there is irrational use of drugs concerning of prescribing, dispensing, purchasing or use by the patient. Furthermore, there is no study carried out in Bangladesh on NGO operated health centers or clinics especially in BRAC Health Center (BHC) to evaluate the prescribing behavior or other aspects of Rational Use of Drugs.

2.2.2 Problem Statement

Around 8,000 children still die each day from diarrheal dehydration worldwide, a toll the world can and must reduce with oral rehydration therapy (ORT)" (UNICEF, 1996). The danger of diarrhea is dehydration and the first treatment is simple and evidence based, oral rehydration. ORT is not glamorous but requires patience and persistence, and it is very economical and effective. There is irrational or inappropriate prescribing of drugs by the prescribers in the treatment of acute watery diarrhea in children under-5 at BHC (BRAC Health Center).

Fig. 2.1 Diagrammatic representation of the problem



According to the diagram, the problem has two dimensions. One is, **under use** of oral rehydration solution, a special drink for diarrhea that can be made by dissolving a packet of oral rehydration salts (ORS) in water. ORS, which costs about 5.00 taka (approx. 7 cents) each, can prevent about 90% of the child deaths from diarrheal dehydration (UNICEF). So, under use means when there is a failure to prescribe ORS, the most effective and least expensive therapy for 90-95% of patients suffering from diarrhea, regardless of cause. Its appropriate use would make intravenous drip therapy unnecessary in all except some few cases of most severe dehydration. The other dimension of the problem is the **use** of non-rehydration drugs, such as, anti-amoebic agents, and/or antibiotic drugs in acute watery diarrhea where their use is doubtful or proved as ineffective.

2.3 Rational Use of Drugs

2.3.1 Definition and concepts

It is very difficult to describe and define the notion of Rational Use of Drugs. All the parties involved in drug use, from the manufacturers to users in the community, have their own perceptions and perspectives about rational use. A prescriber looks at the Rational Use of Drugs on medical criteria, a patient looks on the basis of his expectation, a manager looks to his goals and priorities and a pharmaceutical company on the basis of its success in promotion of the drug. However, the conference of Experts on Rational Use of drugs, convened by WHO in Nairobi defined that:

" Rational Use of Drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and the lowest cost to them and their community"

Based on the concept, **rational prescribing** means that using the drugs those are safe and effective; the drug should be *appropriate* drug for the disease, after correctly diagnosed, and should be given at the right dose and for right length of time.

From the definition it implies that rational prescribing should meet certain criteria. Those are -

- Appropriate indications: Prescribed drug is based on medical rational and it is safe and effective treatment

- **Appropriate drug:** selection of drugs is based on efficacy, safety, and cost considerations

- **Appropriate patient:** There is no contra-indication and likelihood of adverse reaction is minimal to the patient

- **Appropriate administration, doses and duration:** the drugs should be prescribed in appropriate doses and duration and ensures that it is administered properly

But in the reality, prescribing patterns do not always conform to these criteria and can be categorized as inappropriate or irrational prescribing. So, irrational drug prescribing can occur when the drugs prescribed are incorrect, inappropriate, excessive, unnecessary, inadequate or prescribed for the wrong duration.

2.3.2 Causes of irrational or inappropriate prescribing

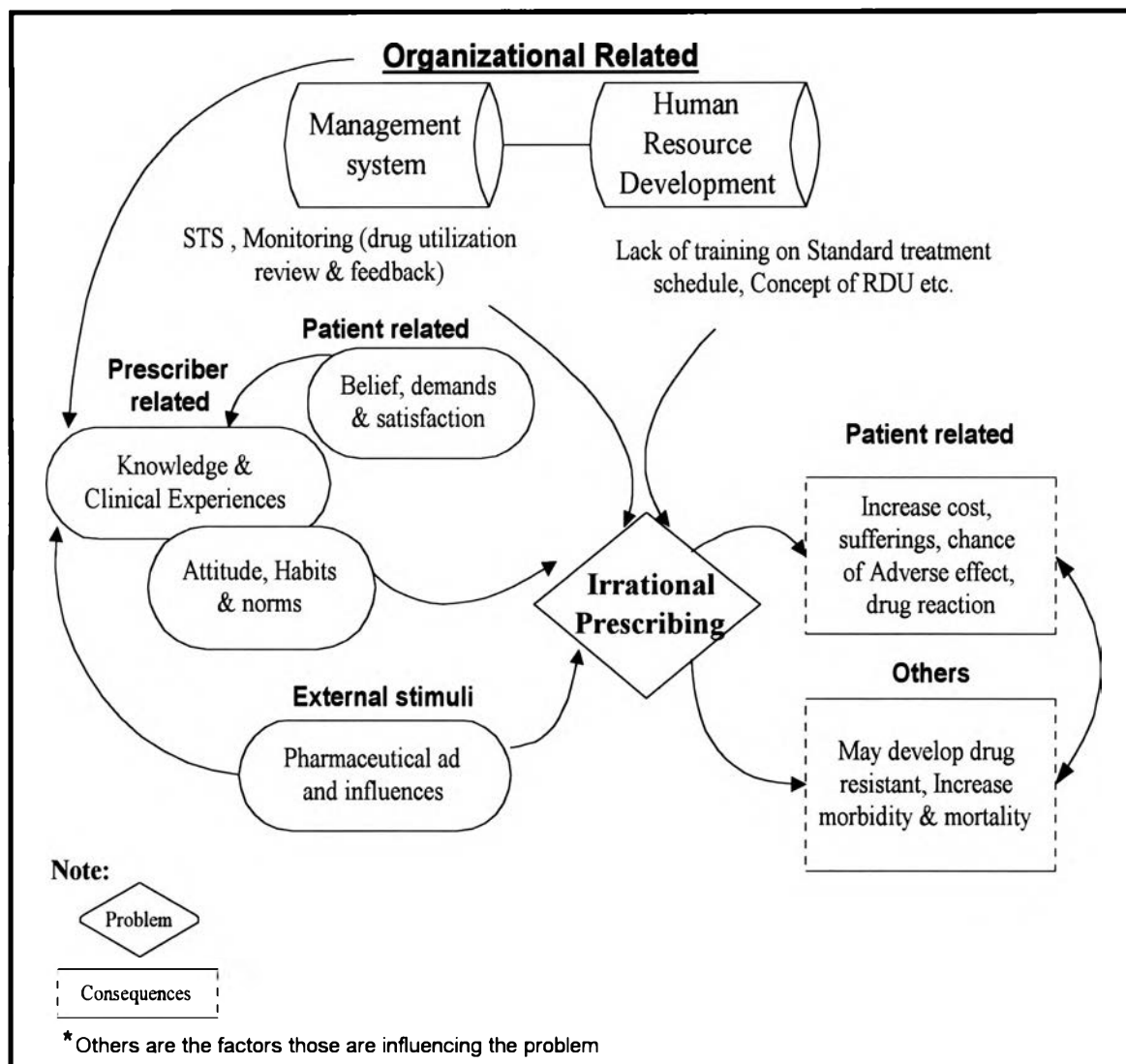
Issuing a prescription is not a simple task but rather complex and inter-related with a variety of factors those are influencing each other. These are –

2.3.2.1 Prescriber related factors

Art of writing a prescription comes from the knowledge and attitude or habit of the prescribers. It is the base of a prescriber by which (s)he draws a conclusion

about a disease and issue a prescription. Knowledge and experiences perhaps brings attitude and builds habit to prescribe a particular preparation for a particular disease.

Fig 2.2 Causes and consequences of irrational prescribing



2.3.2.2 Information related factors

Knowledge comes from information. There are two types of information sources available at BHC setting, one is internal, from the organization, and the other

is external, from the drug company representative. Through training and education prescribers update their knowledge on the specific diseases as well as current issues and standard treatment schedule builds a norm in the organizational setting. Proper monitoring and supervision would strengthen adherence with the norms. The other information source, coming from Drug Company, is very much non-existent in this organizational setting as there will be no personal and/or economic benefit to the prescribers, but it may influence irrational prescribing.

2.3.2.3 Patient related factors

Sometimes prescribing also depends on culture and belief of the patients. Patients ask for special medication, such as, liquid or injectable preparations, that they have affinity to use whether indicated or not.

Among the various factors, the factors that upgrade the knowledge of the prescribers is perhaps more important, as because it will bring changes in attitude and habit. The patient related factors could be manageable if the prescribers have enough knowledge about the disease and its treatment. So, it is feasible to motivate prescriber to prescribe rationally by internal stimulation, such as, introduce STS and educate them about it to make it familiar.

2.3.3 Consequences of irrational prescribing

Impact of irrational or inappropriate prescribing varies from one aspect to another. Due to irrational prescribing there is a decrease in the quality of drug therapy

leading to increase in sufferings to the patient as well as relatives or care takers. That will lead to increase in the morbidity pattern, which in turn results in high mortality. There will be waste of resources in all aspects such as human, financial or other resources leading to unavailability of vital drugs and increase in the cost of treatment. There will be a possible chance of having adverse drug reaction or side effects. There is also a danger of emerging antibiotic resistance due to inappropriate or irrational prescribing. Patients may be psychologically dependent on drugs leading to misbelieve that there is "a pill for every ill", which in turns will increase the patient demand.

Thus, a good quality treatment reduces sufferings, gains confidence of the patients in the health care system and increases willingness to pay for the services. That means a good quality of care enhances the sustainability of the health care system.

2.4 The rationale for selecting diarrhea

This study focuses on acute watery diarrhea cases for assessing the prescribing pattern of the prescribers of BRAC Health Center (BHC).

Diarrhea is the cause of over 3 million deaths of children under the age of 5 years annually in the world (WHO 1995). Diarrhea can kill children by draining out too much fluid from the body leading to dehydration. Diarrhea can also cause malnutrition. So, it is essential to give a child with diarrhea plenty of liquids to drink. *"Dehydration kills a child every 10 seconds"* – using ORS can prevent most of these

deaths. Although ORS was discovered in late 60s by the researchers of Bangladesh & India; its use is not satisfactory in Bangladesh. The percentage of diarrhea episodes in under 5 children treated with ORS were 45%, 48% and 46% respectively in 1993, 94 and 95; whereas the national goal for the ORT use rate by 2000 A.D. is 80% (BBS & UNICEF, 1997). Standing at 1999, the goal for the ORT use rate (perhaps less than 50% looking through the three years data mentioned) although looks unrealistic, efforts to improve it as much as possible is attempted by this intervention.

2.5 Diarrhea and Diarrheal Diseases

The term diarrheal diseases represent a group of diseases where the main symptom is diarrhea, which means an increase in the frequency in passing liquid form stools. On an average, children below 3 years of age in developing countries experience three episodes of diarrhea each year (WHO 1995).

2.5.1 Definition of diarrhea

According to WHO diarrhea is defined as “passing of loose or watery stools three or more time within 24 hours after the age of three months”. It is the consistency of the stool rather than the number that is most important. Frequent passing of formed stool is not diarrhea.

2.5.2 Clinical types

Diarrhea can be categorized as acute diarrhea, persistent diarrhea and diarrhea with severe malnutrition. Passing of loose or watery stools 3 or more times within 24 hours is named as acute diarrhea. WHO / UNICEF defined acute diarrhea as “an attack of sudden onset, which usually lasts 3-7 days and even up to 10-14 days”.

Acute diarrhea can be further categorized as watery diarrhea and bloody diarrhea. Watery diarrhea accounts for most of the diarrheal death, where the main danger is dehydration; weight loss also occurs if feeding is not continued. Acute bloody diarrhea, also known as dysentery, is characterized by blood and mucus in the stool where the main dangers are intestinal damage, sepsis and malnutrition including dehydration. Deaths due to dysentery are mainly associated with fever and other conditions such as malnutrition rather than by dehydration. In persistent diarrhea, which lasts 14 days or longer, the main danger is malnutrition and serious non-intestinal infection and dehydration may also occur. Diarrhea with severe malnutrition is usually associated with protein energy malnutrition. The main dangers are severe systemic infection, dehydration, heart failure, vitamin and mineral deficiencies.

2.5.3 Dehydration

There is increased loss of water and electrolytes such as sodium, chloride, potassium and bicarbonate in the liquid stool during diarrhea. Water and electrolytes are also lost through vomit, sweat, urine and breathing. Dehydration occurs when these losses are not replaced adequately and a net deficit of water and electrolytes

develops. The most common causes of diarrheal dehydration are rotavirus, enterotoxigenic *Escherichia coli* (ETEC) and, during epidemics, *Vibrio cholerae* O1 or O139.

The degree of dehydration is graded according to signs and symptoms that reflect the amount of fluid lost:

- In the early stages of dehydration there are no signs or symptoms.
- As dehydration increases signs and symptoms develop. These include: increased thirst, restless or irritable behavior, decreased skin turgor, dry mucous membranes, sunken eyes, sunken frontanelle (in infants), and absence of tears when crying vigorously.
- In severe dehydration, these effects become more pronounced and the patient may develop evidence of hypovolumic shock, including diminished consciousness, lack of urine output, cool moist extremities, a rapid and feeble pulse (the radial pulse may be undetectable), low or undetectable blood pressure, and peripheral cyanosis. Death follows soon if rehydration is not started quickly.

2.5.4 Malnutrition

In reality, Diarrhea is, as much a nutritional disease as one of fluid and electrolyte loss. Children who die from diarrhea, despite good management of

dehydration, are usually malnourished and often severely so. During diarrhea decreased food intake, decreased nutrient absorption, and increased nutrient requirements often combine to cause weight loss and failure to grow: the child's nutritional status declines and any preexisting malnutrition is made worse. In turn, malnutrition contributes to diarrhea that is more severe, prolonged, and possibly more frequent. This vicious circle can be broken by:

- Providing nutrient-rich foods during diarrhea;
- Giving a nutritious diet that is appropriate for the child's age, when the child is well.

When these steps are followed, malnutrition can be either prevented or corrected and the risk of death from a future episode of diarrhea is much reduced.

Diarrhea is extremely common and sometimes life threatening because of the dehydration and malnutrition it causes if it goes untreated. Diarrhea has been difficult to control for a number of reasons such as inadequate living conditions, including poor water supply and overcrowding. Lack of personal and domestic hygiene, incorrect feeding practices, pre-maturity and poverty are the contributory factors to diarrhea.

Most of the pathogenic organisms are transmitted by oro-feecal route that might be water borne, food borne or direct transmission via fingers or non-animated agents like toys, spoons, towel etc. or dirt which may be ingested by the children.

2.6 About ORS

In the late 1970s, diarrhea was killing around 5 million children each year (UNICEF). The most obvious cause was due to dehydration – giving the child water to drink – didn't work because the liquid rushed through the digestive tract too quickly to be absorbed by the body tissues. The only answer at that time seemed to be to avoid and bypass the digestive tract altogether and rehydrate the body by using an intravenous drip, which is invasive and traumatic procedure for a child. And because someone must administer it with medical training, it is completely impractical for most episodes of childhood diarrhea that takes place out of range of any kind of medical attention.

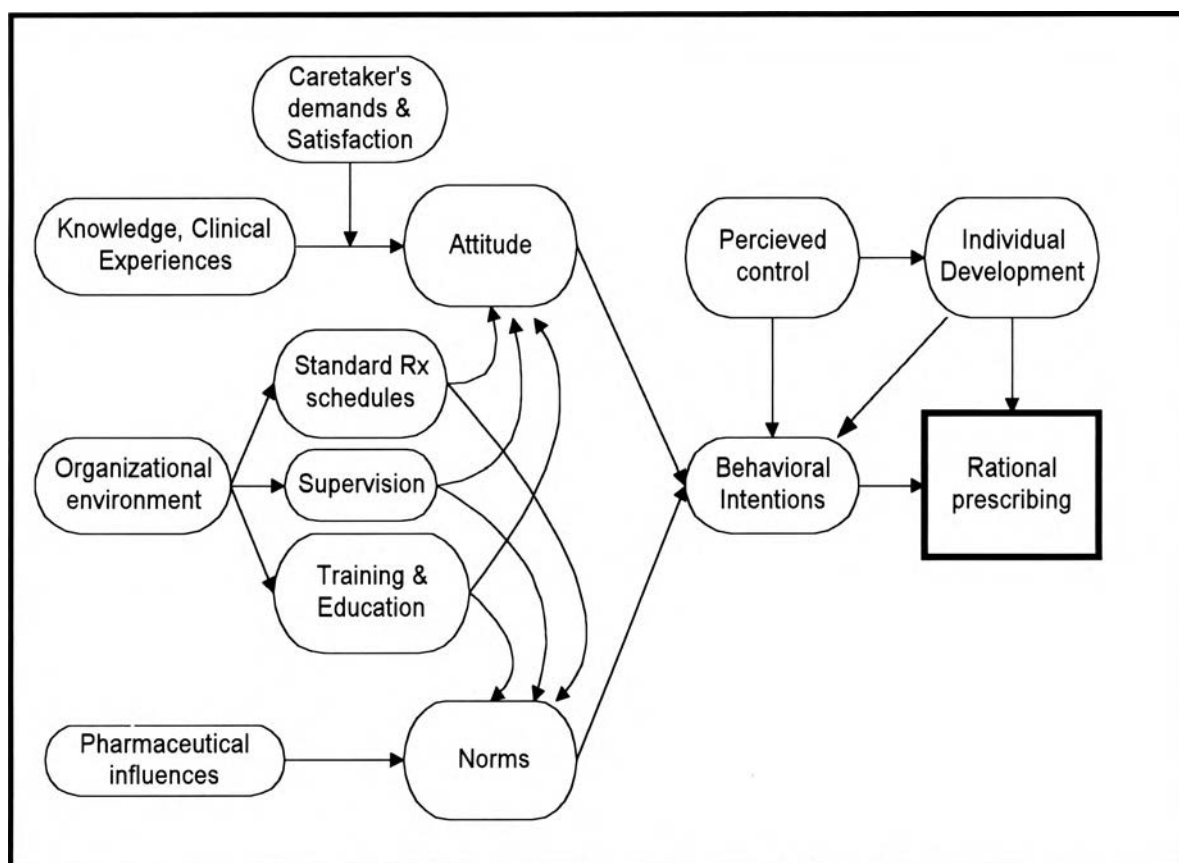
In 1968, researcher from Bangladesh and India discovered that adding glucose to water and salt in the right proportions enabled the liquid to be absorbed through the intestinal wall. So, anyone suffering from diarrhea could replace the lost fluid and salts simply by drinking this solution. One of the first large-scale field operations of ORS took place in 1971 during the War of Independence of Bangladesh when outbreak of cholera swept through refugee camps. Out of the 3,700 victims treated with ORS, over 96% survived (UNICEF, 1996).

The children who get plenty to drink are unlikely to die from diarrhea. Most of the diarrhea in children is due to rotavirus (WHO, 1995), for which no specific remedy exists. So, rehydration with water, carbohydrate and electrolytes are essential, usually the first, and often the only treatment necessary for children.

The physiology of oral rehydration is that the water is absorbed from the intestinal tract together with sodium and this absorption would be increased with sugar and starch. Therefore, sodium and sugar (glucose) are the basic ingredients of oral rehydration fluid. So, the primary therapy of diarrheal diseases is the prevention of dehydration.

2.7 Conceptual Framework of intervention(s):

Fig 2.3 Conceptual framework



Source: Adapted from Reasoned Action Model and Social cognitive theory

The conceptual framework is adapted from the “Reasoned Action Model” (Health & Human Behavior 1993) and “Social Cognitive theory” (Porras 1987) which

state that rational prescribing on Diarrheal disease in children under 5 years of age depends on several factors that we need to look at. The theory of reasoned action was developed by Icek Ajzen and Martin Fishbein in 1974 and 1980, which is a modified version of Dulany's theory (1968) of propositional control. Reasoned action model explains as all human behavior is under voluntary control and the social cognitive theory explains that the messages coming from the organizational environment should affect individual's efficacy and outcome expectation in such a manner that desired new behavior are more likely to occur.

The framework describes the relationship between attitudes and behavior is being mediated by behavioral intention (Bagozzi, 1981; Fishbein & Ajzen, 1975; Warshaw, 1980). Based on this theory, if the prescribers' attitude doesn't intend to prescribe rationally, then the prescribing pattern is unlikely to be changed.

Attitude of the prescriber here depends on the knowledge and clinical experiences of the prescriber. Clinical journals, editorials, clinical meetings and so on will help to update the knowledge and prepare the ground for change. The attitudinal change also comes from the clinical experiences of the prescriber by perceiving the caretaker's satisfaction (symptoms disappear & patient become happy). And from the organizational environment where there is a set standard treatment schedules for changing behavior or influences from the management system (supervision) and human resources development (training & educational materials to prescribers). Sometimes there are caretaker's demands of a particular preparation such as liquid preparation drugs from the belief that it is more powerful, suitable and effective.

Failure to perceive patients' expectation is a major reason why prescribers prescribe more drugs in total than patient expects (Cockburn & Pitt, 1997).

Subjective norms are the perceptions of the prescriber. Norms perhaps the most powerful factor, they are the “rules of the game;” (Porras, 1987) informal or formal guideline on how to behave. Norms guided people how to behave, how to look, what to do or how to see things, how to interpret what you see, what to believe, what to look out for and what to ignore. So, the organizational environment such as policy (rules & regulations), management (standard treatment schedules) & training (education) or social interaction in the organization controls the norms.

There is a management guideline of BHC that also includes drug formulary and treatment protocol for emergency cases. The prescribers rarely uses it appropriately (Afsana, 1997). Other studies comparing the public and private sector also mentioned that adherence with the standard treatment protocol is very minimum and varies from 17% to 75% and is especially worse in private setting (Baqui et al., 1997; Chowdhury et al., 1995). Subjective norms are also dominated by other significant factor like pharmaceutical influence or advertisement. So, intentions for rational prescribing are jointly determined by these factors, attitude towards prescribing and subjective norms.

Ajzen and Fishbein in 1985 also added the concept of "perceived control" as a third influence besides attitude and subjective norms. Thus, if the prescriber perceived that there is a scope of individual development of his/her career from the organizational system, would be motivated to stick to standard treatment protocol that

leads to rational prescribing as well. So, prescribing behavior of BHCs' prescriber depends on the behavioral intentions whether s/he wants to issue a rational prescription or not. Manning et al. reported in a study in 1986 that when a prescriber states an intention to change, an actual change is resulted 50% of the time. Therefore we need interventions for changing attitudes and normative beliefs, which influences the intentions of each prescribers to behave rationally through several feedback loops; there will be a significant change in the prescribing practices of the prescribers of BHC.

2.8 Possible intervention strategies to improve rational prescribing

Three types of approaches have so far been discussed in this arena of Rational Use of Drugs (ICIUM, 1997). These are -

- 1) **Educational** approaches which seeks to inform prescribers to use drugs in different ways and where promoting effective, safe and economical drug use are potentially quite successful.

Examples of educational strategies are - Prescribers' pre-service or in-service training or workshop, printed educational materials, such as, newsletters, drug bulletins or feedback report etc.

- 2) **Managerial** strategies structure or guide decisions through the use of specific processes, forms and so forth and where there is an attempt to achieve more cost-effective use of pharmaceutical resources.

Examples of managerial strategies are - Diagnostic and treatment schedules or guidelines, structured drug prescribing form, periodic effective monitoring & clinical supervisory system etc.

- 3) **Regulatory** strategies that restrict allowable decisions by placing absolute limits are generally focused to aim at saving money or preventing improper use of drugs. So, it completely relies on rules and regulations to change behavior. There may be some unintended impacts of specific types of regulations. For example, in Bangladesh, banning of all antidiarrheals resulted in increased use of metronidazole and mebendazole as antidiarrheal substitute (Chowdhury et al, 1990)

2.8.1 Mechanisms

According to Laing, a single strategy or measure may improve the drug use situation, but combining of two strategies is likely to be most successful and sustainable to improve a single problem of drug use. Different approaches work in different ways to improve drug use. Educational strategies such as training, workshop or printed materials may help to change in attitude of the prescribers by increasing their knowledge and skill. Virtually it is the foundation for writing a rational prescription. Through this approach specific motivation can be provided to the prescribers and usually it is interactive & participatory. An educational strategy practically builds habit through norms. A managerial strategy such as a list of essential drugs or formularies, structured prescription pad, treatment guideline etc. develops some norms in the organizational set up. Whether these are working well in the organization

or not could be ensured by effective supervision, one of the managerial strategies to improve rational use of drugs. Regulatory measures, such as, limiting which drugs are supplied, limits on number or quantity of drugs per patient or generic prescribing etc. are carried out to control the situation by force. Practically, it might have some disadvantages and might have some unintended effects that I mentioned earlier about the banning of antidiarrheal preparations in Bangladesh.

These strategies could be implemented together to maximize impacts at a single point in time or in sequence to reinforce effects. Recently a series of interventions launched in Mexico City to improve the treatment of diarrhea showed a good example that how interventions can combine different approaches. Initially prescribing survey was done and physicians from the clinic then participated in a training workshop where results of survey were presented. In that workshop the physicians developed a normative treatment algorithm for diarrhea. This was followed by a peer review committee activity for the next six months where the review committee rotated and assessed their own and their colleague's diarrhea case records. At the base line the status of study physician and control physician were almost same, 25% and 20% respectively. After the workshop, the prescribing pattern among the study physicians became doubled from the base line according to the treatment algorithm they prepared. And after the peer review, it rose to triple in the study physicians whereas the prescribing pattern remained same in the control group (Gutierrez, Conyer, Guiscafre, Reyes, Martinez & Kumate 1996).

2.8.2 Face-to-face Education

Talking directly to prescribers about appropriate drug use is a common intervention strategy. Face to face education is a two-way communication, where the educator can talk with the prescribers resulting a high level of understanding suggesting encouragement for a behavior. It is perhaps the best medium for providing effective education (Ross-Degnan et al., 1997). It has been found to be an effective strategy for improving prescribing practices, especially when combined with other approaches. It is a flexible strategy, which can be arranged in any setting such as health center, hospital, pharmacies or even at continuing education seminars held at district level where educators are able to talk to prescribers. Also it can occur be used in many situations like during training, supervisory or regular support visits. There are some reasons why face to face education is more effective than other approaches -

- As it is participatory discussion (two-way) prescribers remember and learn more than by passive reading of information.
- During the process, educators can assess specific motivations of prescribers for their practices and adopt messages to relate to this motivation.
- A verbal informed agreement with the educator about correct behavior can creates psychological incentives to conform to recommended practices.

This face-to-face education is planed systematically on the basis of need assessment and prioritization resulting from the in-depth interview involving the

prescribers of intervention BHCs. It is responsive to the rapid changes in the world and inclusive to the prescribers.

2.8.3 Other approaches versus face-to-face education

In a review, Ross-Deganan found study carried out in 1983 in the United States by Avorn and Soumerai where prescribers were divided into 3 groups. One group received printed material and the other group received printed material and face-to-face individual visits by trained educators and the third was a control group. There was a highly significant improvement of prescribing practices in print and face-to-face visit group. In 1989 the same authors reviewed published experiences in primary care interventions where 44 reports of educational, managerial and regulatory approaches were identified. The two reports concluded that printed educational materials alone may change knowledge but do not change practice while an improvement was shown when it is carried out with some sorts of training. Raisch in 1990 also reported that printed individual feedback might not be sustained.

A study in Indonesia compared large groups training with small group face-to-face training on diarrhea. The small group face-to-face educational intervention has shown greater impact in improving prescribing pattern over a large group formal seminar. Furthermore, the small group approach was less expensive and fit better with the existing supervisory system (Santoso, Suryawati, Prawitasari & Ross-Degnan, 1997).

A critical review by Ross-Degnan et al in 1997 found that 3 out of 14 educational interventions achieved greater improvements while 7 showed moderate and 4 had little impact in improving prescribing behavior. The first two groups which had larger impact used either problem oriented, multiple sessions using large group (de Varies 1995, Lopez Linares 1991, Qazi 1996) or focused on single health problem (Diarrhea, ARI etc.) using small group (Chowdhury 1995, Gani 1996, Santoso 1996, Kafuko 1996). The educational sessions are useful in any setting (district or health center based), but on-site educational session using small group was found sustained when compared with the control after 2 years (Santoso et al., 1996).

The other studies in Indonesia and Uganda came with the same results that face-to-face education has had greater impact on promoting rational prescribing especially when it is conducted more than once. In both the countries there were significant increases in ORS sales and corresponding decreases in antidiarrheal sales (Gani et al., 1996; Adome et al., 1997).

Hadiyono JEP conducted one important study in Indonesia where she identified that prescribers and patients had different ideas about injections. After bringing prescribers and patients together in a neutral place and neutral environment with clinical experts the injections practices of prescribers were dramatically changed. While this intervention was a little different to the conventional face-to-face educational activity, it showed how important this strategy was for motivating the prescribers.

2.8.4 Focus and selection of interventions

This study focuses on the rational or appropriate treatment of acute watery diarrhea in children under 5 years – encouraging to prescribe ORS (oral rehydration salts) and discouraging to prescribe antibiotic or anti-amoebic agents. This focus of introducing standard treatment schedule to the prescribers through face-to-face education is the best to minimize irrational prescribing. Face-to-face education is chosen introducing standard treatment schedule to the prescribers of BRAC Health Centers, because -

- Organizational and cultural feasibility – Already there is a STS on ARI and TB existing in the organization. Personnel of these two programs are trained on it and the programs are running well.

- Technical feasibility - For implementing this program there is no need of sophisticated communication systems or equipment. Introduction of STS through face-to-face education fits better with the existing supervisory system of the organization.

- Likelihood of success - Face-to-face education is a two way, participatory and interactive discussions between the prescribers and educators. Educators can assesses specific motivation and adopt messages to relate to this motivation. This face-to-face strategy not only introduces STS but also creates a verbal agreement between prescribers and educators.

- Economic feasibility - As it would be implemented during the supervisory visit, so it will be economical. Other strategy such as, training needs a wide ranges of resources and is more costly than face-to-face education.

2.8.5 Standard Treatment Schedule

Standard treatment schedules (STS) are also known as standard treatment protocol, therapeutic guidelines, standard treatment guidelines (STG) and so forth. It lists the preferred drug and non-drug treatments for common health problems in a specific health system. The important considerations for the development of standard treatments are - a) it targets the most priority condition existing in the community b) it coordinates with special programs c) uses fewest drugs necessary d) uses essential drug list only e) involves respected clinicians f) considers patient perspective and choose cost-effective treatment. The key features of standard treatment include simplicity and credibility as the treatment is developed by the most respected clinicians. Introduction of standard treatment changes the attitude of the prescribers after being trained or educated. Drug procurement and supply also depends on the standard hence increase in the adherence with the drug list. So, it is one of the managerial strategies selected for this project to improve prescribing behavior.

There are lots of advantages of standard treatment on the benefits of patients as well as benefits of the prescribers and policy makers.

From the patient's points of view: The consistency of the prescribing pattern among prescribers reduces confusion to the patient and increase compliance. Moreover it is the most effective treatment prescribed for the patients.

From the prescriber's points of view: Through standard treatment providers can concentrate on correct diagnosis and gives expert consensus on most effective, economic treatment for a specific setting.

From the managers and policy makers' points of view: There should be sufficient quantities of drugs available at the health center, as drug demand is more predictable, so forecasting is more reliable. Further more it provides a method to control costs by using drug funds more efficiently and serves as a basis to assess and compare quality of care.

Although standard treatment has lot of advantages, it can not produce any effect on prescribing pattern of the prescribers when implemented alone. A study of rural health units in Uganda by Kafuko illustrated that provision of standard treatment guideline alone did not change the behavior of the prscribers. In that study STG were supplied to all 3 groups, but there was a targeted training to one group of prescribers on STG. The 3rd group had STG plus training along with additional monthly supervisory visit for 6 months. Across all indicators those are tested, simple dissemination of STG showed no effect; targeted on-site training had consistent positive effects on performance, and supervision sometime resulted in additional improvement.

Another study in Tanzania by Wiedenmayer et al. illustrated the same results that although adherence with the STG had improved significantly but other prescribing indicators did not change from the base line. The study suggested that more effective and repeated educational programs including supervision to the prescribers along with the standard treatment might be necessary to improve the prescribing behavior. So, disseminating standard treatment schedules or clinical guidelines without active implementation was clearly ineffective.

Thus, experience has shown that even when the other aspects of the rational use of drugs such as drug supply functioned well when based on an essential drug list, opportunity exists for ineffective, unsafe, or wasteful prescribing. Standard treatments list the preferred drug and non-drug treatments for common health problems experienced by people in a specific health system. As such, they represent one approach to promoting therapeutic, effective and economically efficient prescribing. There was a review of studies on clinical guidelines and found that they can bring improvement in prescribing practices when introduced within an audit system where adherence to guideline is systematically reviewed (Ross-Degnan, Laing, Santoso, Ofori-Adjei, Diwan & Lamoureux, 1997). Standard treatments are now currently used all over the world in the U.S., Europe, Latin America, Asia, Africa, and the Western Pacific.

Standard treatment algorithm on two diseases (TB & ARI) developed by WHO adapted by the national programs exists in BRAC setting. The personnel were trained on those, and the result of those programs is very much satisfactory. Both the programs achieved the national target to control TB & ARI in the BRAC catchment

area, which are the facilitation program to the government TB & ARI control activities (RHDC Annual report, 1996, 97). So, when implemented effectively with other measures, standard treatments can produce greater improvement and perhaps promote rational prescribing.

Therefore, an educational program (face-to-face education) is needed to introduce this standard treatment schedule to change prescribing pattern of the prescribers of BHC.

2.9 Conclusion

Diarrhea, a well known public health problem causing great deal of suffering and loss of children, our most ever loving creature in the mankind. In the late 1970s, a powerful remedy, ORS was developed to fight the battle against diarrhea. This is the only accepted and recommended treatment in case acute watery diarrhea that can save 95% of the total diarrheal death (WHO).

The best way to control and prevent dehydration due to diarrhea is to give the child appropriate amount of ORS (oral rehydration solution) to drink. The prescribers in the health centers are the main focal point in prescribing ORS in their prescription. By introducing the standard treatment schedule of diarrhea through face to face education, millions of death of the children can be prevented.

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