

CHAPTER III

PROPOSAL

Continuing education to improve quality of care in primary health care management of childhood acute diarrhea provided by private physicians

3.1. Introduction

Quality of care is an important attribute of health care that can determine the outcome of the patient. Quality of care is interesting and important issue for the patient, provider, government, and financier of health care because it can determine the outcome of a disease, equity, efficiency and ethics (Newbrander & Rosenthal, 1997).

From the aspect of public health, the poor quality of care in some conditions e.g. communicable diseases, can lead to increased morbidity and mortality in the community accruing transmission of diseases and wasting the resources and adverse complications like multidrug resistance. (Brugha & Zwi, 1998).

There are three levels to assess quality of care: quality of care determined by performance of the physician, quality of care determined by the physician and patients, and quality of care received by community (Donabedian, 1988). In this proposal, quality of care determined by performance of the physician will be assessed because other levels of assessment need more intense resources. To assess the quality of care determined by patients and the physician, not only performance of the physician but also behaviors of patients have to be studied. For quality of care

received by the community, accessibility and availability of services to those community has to be examined.

3.2. Problem statement & Rationale

Quality of care in private physicians is a demanding issue in developing countries as well as in developed countries. Although there are a lot of quality improvement and control measures by continuing education and regulation in developed countries, developing countries still lacking effective continuing education and enforcing of regulation. Therefore problems in quality of care in the management provided by private physicians are found in some studies. Inappropriate prescribing, excessive use of injections, neglect of counseling and health education has been reported in some studies (Bhat, 1993, Brugha & Zwi, 1998).

3.2.1. Poor quality of care in private physicians in primary health care management of childhood acute diarrhea

Most deaths from acute diarrhea in children under-5 can be prevented by simple proper management. Proper management should be carried out since beginning of treatment wherever it is. When they came to clinics, proper management according to recommended standard become essential to determine the outcome of illness. But there were some problems in the management of acute diarrhea in primary health care setting and those problems were found to be more prevalent in private clinics. It was evident in following studies done in Mexico.

A study in the central Mexico also showed that quality of management given by private physicians was found to be less efficient than the quality of management

given by public physicians was. The study was carried out in Tlaxcala, the smallest state in Mexico located in central region, where the significant portion deaths from diarrhea and acute respiratory infections (ARI) sought medical care in private physicians. Trained observers through clinical observation using a structured checklist evaluated management of the children with diarrhea and ARI given by private and public physicians. Totally the 93 private and 49 public physicians were studied. **The rehydration therapy, dietary management, prescription of antibiotics and counseling** to the mothers were evaluated. Finally the analysis of the findings demonstrated that the quality of the management of public physicians were significantly higher than that of private physicians. The researchers indicated that there was no more training for the private physicians to keep themselves up to date with modern trends and no more professional interaction with peers and colleagues. Therefore their working environment was very isolated without monitoring and control. Periodical medical recertification was also not required. These factors were noted as the potential reasons of poor quality in private physicians (Bojalil, et al., 1998). The studies indicated that quality of care in the primary health care management of childhood acute diarrhea provided by private physicians was lower than the recommended standard indicating need of appropriate interventions to improve the situation.

3.2.2. Problems in Myanmar

There are no previous studies on quality of care in the primary health care management of childhood acute diarrhea given by private physicians in Myanmar. But the situation can not be better than other developing countries. Among the various diseases and illness, which private physicians are providing care, infectious diseases

are very common. Out of those infectious diseases, diarrheal diseases in children under-5 is the problem seen in every season in urban area with low socio-economic status. The magnitudes of poor quality of care in the management of diarrhea diseases in children under-5 can be gauged from the list of common causes of death among under-5 children. Diarrhea still continues to exist at the top of the list of priority diseases (National Health Plan, 1996.) As the Mexico study done by Bojalil, et al in Tlaxcala in 1998, inappropriate rehydration therapy, inappropriate drug prescribing and use of commercial salts, wrong dietary advice and inadequate counseling can be expected in the management of diarrhea diseases in children under- 5 provided by private physicians in their practice in Myanmar, too. Although there is no studies to reveal the situation clearly in private sectors as well as in public sector, available data in public sector are indicating that they are still trying to achieve 100% coverage by the year 2000(National Health Plan, 1996). It reflected the quality of management in public sector is not satisfactory in the management despite vigorous effort with proper planning. Therefore the quality of management in private sector where there is no proper planning may be worse than public sector.

One of the reasons leading to these problems is lack of information and up to date knowledge about modern trend and irrational use of drugs in response to information of drug firms and store, and perceived patient expectation. The poor quality of care in the first visit of consultation to the private physician is rather important to prevent the progress of illness. Unscrupulous management at the beginning may be followed by undesirable outcome. It can give way to develop complications such as delayed recovery, chronic illness, severe dehydration, shock and death. Nearly 2 millions of children under the age of 5 lose their lives every year

(World Health Report, 1998). This mortality is preventable by proper management from the beginning of illness either at home or clinical setting. For urban population private clinics are the place of choice to seek care so that proper management in private clinics become the important point where the intervention should be directed.

3.3. Continuing education to improve quality of care

To improve the quality of care, there are several approaches: policy and regulatory intervention, provider training and patient directed intervention and multifaceted approaches (Brugha & Zwi, 1998). Among them CME is often the method of choice to implement because of feasibility and practicability. Therefore the CME program that can create the motivated learning and active participation of physicians with subsequent change in positive behavior is planned.

Some have defined that the continuing education is a vital way to maintain and improve the quality of care given by professionals to meet the need of current situation and some newly developing situations. Continuing education is all the experiences, after initial training, that help health care personnel to maintain or learn competence relevant to provision of health care. Thus continuing education includes all the learning experiences, not just the refresher courses, lasting throughout the life (Abbatt & Mejia, 1988).

It has also been noted that the continuing medical education (CME) is an important phenomenon because the health is a global issue. The international CME is more than conferences and courses- it includes projects in need assessment, a wide variety of formats and strategies and evaluation of doctors' performance and health

care outcomes. CME may be seen as “effector arm” in complex healthcare systems, whether in developed or developing countries (Davis, 1998).

3.3.1. Effect of continuing education on quality of care

There have been many studies that conducted to establish the relationship between the CME activities and performance of the physicians and patient outcome. Davis, Thomson, Oxam and Haynes (1992) reviewed 50 selected randomized controlled trials of CME interventions to assess the impact of CME interventions on physician performance and health care outcome. Types of performance of the physicians were different from study to study. Some studied on general clinical management, some on the use of investigations and resource, and some on prescribing practice, counseling strategies and preventive care. Total 50 studies analyzed the physician’s performance among which 43 studies showed positive results in some important measures of resource utilization, counseling strategies, and preventive medicine. In the review the interventions were classified into four types according to Green and colleague’s **precede-proceed Model**. Those are predisposing (communicating and disseminating information), enabling (facilitating the desired change in the practice site), reinforcing (by reminder or feedback), and intervention using all three previous categories or multipotential interventions (chart reviews and chart stimulated recall, influential educational leaders and clinical opinion leaders). From the review they found that clinical management and counseling behavior were relatively complex and difficult to change. Prescribing and preventive practice were and use of investigations appeared easier to change because the intervention become more specifically focussed on the individual component of the management. Finally they concluded that interventions using the predisposing element only to disseminate

the information and printed material alone were not effective to change the performance of the physicians. However those studies using enabling and / or reinforcing elements were more effective; for example workshops that provide more opportunity for case discussion and rehearsal of practice behaviors were considerably more effective than didactic programs. The intervention using type three elements with feedback and reminder were found to be useful and effective to implement relieving logistic and social barriers. In conclusion, they found that use of mixture of CME strategies including three elements and use of educational influential were effective and comprehensive.

The same reviewers conducted the same type of review using similar but modified classification on interventions in 1995. Those classifications were (1) educational materials (including noninteractive printed and audiovisual, and computer produced information), (2) formal CME program such as conferences, seminars, workshops, small group sessions, traineeships, and teleconferences, (3) outreach visits including academic detailing (visit by physician educators such as pharmacists) or counter-detailing directly to physicians by pharmacists and others, or practice facilitation by nurses and other professionals (4) local opinion leaders or educational influentials, (5) patient mediated interventions such as patient education materials, (6) audit with feedback, including chart review with peers or supervisors and (7) reminders. They concluded that multifaceted approaches using three or more methods of interventions were found to be more effective than others using less intensive method singly or two in combination to improve the practice of physicians (Davis, Thomson, Oxam and Haynes, 1995).

In a study carried out in Zambia in 1996, the effect of continuing education on quality of patient management and rational drug use was evaluated with use of randomized controlled trial. A total of 5,685 patient cards were analyzed for the quality of case management and rational drug use. The form of intervention was continuing education seminars repeated three times within four months. In the intervention health centers the average number of drugs per patient decreased from 2.3 to 1.9 and proportion of the patients treated with nonpharmacological treatment increased from 1 to 13.2%. Recorded history taking, examination, and diagnosis also improved in the intervention group. More drugs were correctly chosen in the intervention health centers compared to control health centers. The proportion of the patients prescribed antibiotics decreased and the proportion of the patients adequately managed increased in the intervention health centers. They concluded that the continuing education in the form of repeated seminars was effective to improve the quality of management and rational drug use in primary care setting (Bexell, et. al, 1996).

In a study done in New York municipality, the impact of education using training in self-regulation theory on the quality of care and patient satisfaction in the management of asthmatic attack in children were assessed in 69 pediatricians who were randomly allocated. The intervention was interactive seminar based on theory of self-regulation guiding the physicians to examine ways to develop a partnership with their patients. The changes were measured with use of surveys on physicians and parents of the patients. The program physicians behaviors in the management of the patient such as use of more appropriate medicine, dealing with patient's fear and giving written instruction to the patient and review of the instruction, educating the

patient on home management and reducing the physician time compared to control group were found to be improved by intervention (Clark, et.al, 1998).

Some studies reported that interventions using continuous quality improvement principle to identify the educational need of physicians and dealing the need were effective for the improvement of practice and behavior of physicians. These examples were found in Canada, Denmark, and Norway where the quality of practice were reported effective (Holm, 1998).

In a study in a slum area of Pakistan, it was reported that prescription pattern of private physician in the management of common clinical illnesses could be improved by one of educational strategies using enabling element i.e. academic detailing visit using pharmacist. The intervention included the educational materials such as pamphlets, printed materials and discussion of their prescribing practice for about 15 minutes in their convenient hour. The effect of intervention was found to be significant (Thayer & Harpham, 1997).

All the studies reviewed were done in private physicians in developed as well as in developing countries except in Zambia studies where government health centers were studied. These studies focussed on the form of intervention. They can not give any information on the differences in effect of intervention on specific sectors compared to another.

3.3.2. Building continuing education effectively

Despite continuous effort of CME everywhere, formal education program mostly in the form of didactic approach were found to be hardly effective in changing

behavior of the physicians and patient outcome (Davis, Thomson, Oxam and Haynes, 1995). Therefore there was a growing emphasis on the structure rather than the content of CME. CME program is a learning process that is not unidimensional and need to give attention to psychomotor and affective domain in addition to cognitive domain. Cognitive domain deals with the transmission of information or fact from the provider to receiver. For the building of skill the emphasis should be placed on the psychomotor domain in which practice under the observation of competent trainer. The affective domain indicates the importance of emotional status and feeling of the learners that facilitate or hinder the learning process. The importance of learning environment was also recognized as important determinant as active participation of learners and the role of evaluative feedback (Lewis, 1998).

The characteristics of successful education program reported in a study were the design focussed on a specific problem recognized and identification of the problems and need of solution should be shared by the participants themselves. Active participation of learners, small group teaching and favorable environment for learning with evaluation of outcome by the participants themselves are also important prerequisites for the effective program (Abbatt & Mejia, 1998).

3.4. Background of CME activities in Myanmar

There were no systematic reports that reviewed the CME activities in Myanmar. The renewal of registration of professional certificate in every 2 year after graduation, and licensing of the practice every year had been promulgated since 1951. But the involvement in CME activities is not required for registration. The respective teams of specialties usually carry out the regular and sporadic CME activities under

the guidance of Myanmar Medical Association (MMA). Most CME activities are in the form of conferences, seminar, symposium and talks and rather formal without innovative approaches. Among CME activities the research conferences sponsored by Department of Medical Research, sponsored by MMA, and Directorate of Medical Service of Defense Ministry are regular activities comprising reading of research papers on various subjects. There are also promotional seminar sponsored by drug firms frequently. In- service training on various public health measures and concept are also provided frequently. In hospitals from provincial to general and special has also weekly clinical meeting on various subjects and problem topics involving experts and public physicians.

Generally the CME activities in Myanmar are in the form of seminar, conferences, workshops and symposium but continuous exposure to expert opinion and experience to working environment are best encouraging factors producing quality of care in the management of patient in technical aspects. They almost always happen in the public sector, and hardly involve private physicians. It is clearly evident that there is a striking difference in opportunity of CME activities between public and private physicians. CME is essential for the maintenance and improvement of the professional competence and skill leading to the improvement in quality of care with changing environment and explosive progress in science and technology and changing demand of the community (Breedlove & Hedrick, 1998). Therefore the quality of care given by private physicians in the absence or rare CME activities become questionable. Graduation after training and licensing for life seems naïve in this era when the quality of care is so dependent on the efforts to keep up to date (Parboosingh, 1998). Nearly all the private physicians who exclusively involved in

solo practice are at least 4 or 5 years time span after they completed their graduation and apprentice. They are practicing in isolated situation totally disconnected with academic circles and no linkage to public sector except annual licensing in district health department. Not only extent but also time laps without academic experience make the quality of care of care in private physicians in doubtful situation needing assessment and necessary measures.

Although there is no CME activities in private physicians and suspicion on the quality of care given by them in terms of agreement with standards, they are still favorite choice of health providers perceived by the community across the country. Thirty eight percent of sample population sought care in the physician in a study carried out in 1984 in Myanmar (Roemer, 1991). The convenience of opening hour, accessible location, privacy and personalized service, attentive care and good attitude toward patients and short waiting time are contributing factors leading to choice of private clinic compared to public clinic. In addition the number of private physicians is rather larger than those employed in public sector accounting to 65% of total physicians (National Health Plan, 1996). This figure seems potential workforce for implementing disease control activities that is solely carried out by public sector alone. Effective utilization of workforce needs careful assessment of the quality of care given by them and appropriate intervention should be done if necessary. Therefore continued poor quality in private physicians should not be neglected. Patient with public health important diseases such as pulmonary tuberculosis, sexually transmitted illnesses (STI), diarrhea, and acute respiratory infection (ARI) prefer to take medical care in private physicians. In those cases, the poor quality of care can

give rise to imminent consequences to community with resultant continued morbidity, increased disability, and increased mortality

3.5. Objectives

3.5.1. General objective

To improve quality of care in the management of diarrheal diseases in children under-5 given by private physicians in Hlaingthaya district through CME workshop.

3.5.2. Specific objectives

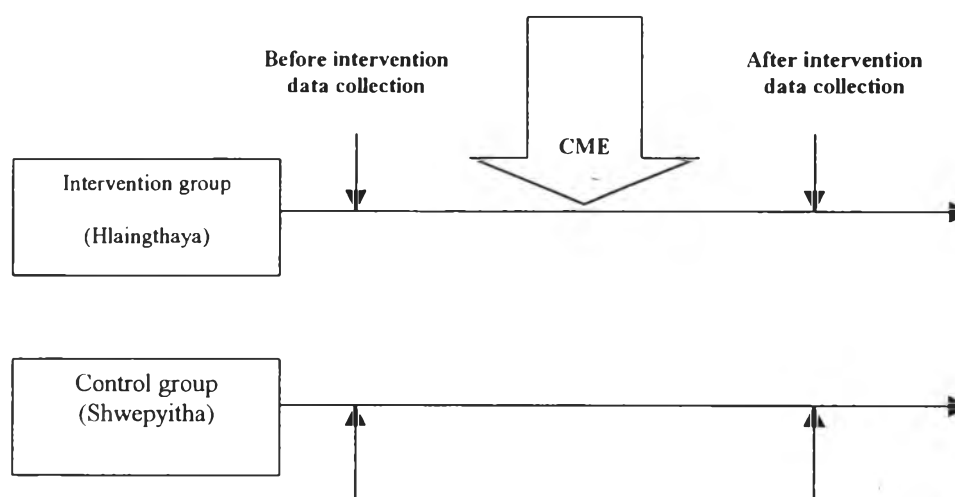
1. To assess quality of care in the management of diarrheal diseases in children under-5 given by the private physicians in Hlaingthaya and Shwepyitha.
 - a. To assess the use of rehydration therapy.
 - b. To assess the dietary management.
 - c. To assess the drug prescribing.
 - d. To assess the counseling of the private physician to the caregiver.
2. To assess attitudes of the physicians related to the management of diarrhea.
3. To develop a CME team and to implement workshops for the private physicians in combination with national diarrheal program and MMA in Hlaingthaya.
4. To evaluate the change in quality of care and attitude in the private physicians after CME workshop compared to control township.

3.6. Methodology

3.6.1 Study design

It is an intervention study with evaluation using quasi-experimental design. There are two study groups: one is intervention township and the another is control township. The design of the study can be seen in the following diagram.

Figure. 3.1. Direction of the study



The quasi-experimental design can fulfill the objective to assess the effect of intervention on the quality of management in the intervention group compared with non-intervention group.

3.6.2. Study population and study area

All the private physicians who are exclusively practicing in private clinic situated in the selected townships will be studied. The physicians' list and address of locations can be identified in the township health department. Although there are private clinics run by public physicians in out-of-office hour, they will not be studied because of their increased chance of exposure to continuing education in their work place making the effect of intervention insignificant.

The selected townships will be Hlaingthaya and Shwepyitha located in the outskirts of Yangon City. Those are selected because of their high prevalence of diarrhea diseases among children under 5 (Townships Health Profiles, 1997) and their similarity in socioeconomic status of population. The number of private clinics in Hlainthaya Township is 18, and 21 in Shwepyitha totaling 39. One of the townships will be provided with CME program so that the organization and communication of the program can be arranged more conveniently. Randomization of the intervention will not be done for the convenience of participants and program organizers.

3.6.3. Study period

After collecting the data in two townships analysis will be done, and then the workshop for continuing education program will be designed according to information resulted from the analysis. It is estimated that the analysis and the planning of workshop will takes 6 weeks at least. Implementation of continuing education program will take 5 consecutive day's session lasting 3 hour per session carried out in the morning to make fewer disturbances for the practice hour. Four weeks after the workshop, the evaluation of the effect of the intervention will be done by another observation in practice using the same instrument. Each data collection is estimated to take two weeks. Therefore the whole study period may be 16 weeks.

3.6.4. Definition

- (1) **Private physicians:** It denotes physicians who are practicing in private clinics in those study townships. But physicians who are practicing both private and public facilities are not included.
- (2) **Private clinics:** Solo practiced clinics, which provide general ambulatory patient care only, and ownership is private.
- (3) **Diarrhea:** passing of loose or watery stool, usually at least three times in a 24-hour period.
- (4) **Acute diarrhea:** loose or watery diarrhea lasting several hours or days but not more than 14 days and not associated with blood in the stool.
- (5) **Primary health care management of childhood acute diarrhea:** it is the management given to a child under –5 with mild dehydration, which consists of following essential components.
 - (i.) **Rehydration therapy with use of ORS or other appropriate fluid**
 - (ii.) **Prescribing drug when necessary**
 - (iii.) **Continued feeding**
 - (iv.) **Counseling mother to take the children if there are signs of dehydration and other problems.**

3.6.5. Outcome variables

(1). The outcome measure intended to change is **quality of care** defined by **performance of private physician in the primary health care management** provided to a child under 5 with complaint of acute diarrhea.

Following essential aspects of physician performance will be studied.

a. Rehydration therapy.

Rehydration therapy is giving ORS or appropriate fluid other than ORS according to degree of dehydration. Dehydration can be classified into three groups; no dehydration, some dehydration and severe dehydration based on the clinical signs and symptoms. In the private clinic, which takes care only ambulatory patients, the childhood diarrhea with no dehydration and some dehydration will be observed. The adequacy of rehydration will be checked according to treatment guideline. (Appendix 6.)

In rehydration therapy following possible actions will be observed.

1. prescription of ORS
2. prescription of other fluid other than ORS
3. prescription of commercial fluid not recommended by guidelines

b. Prescription of drug

Prescription of drug means giving of antibiotics or other symptomatic drugs. The antibiotics are only recommended to prescribe in case of bloody diarrhea. Drug of choice depends on the treatment guidelines. Symptomatic drugs are not usually recommended in case of diarrhea alone. In case of associated fever, paracetamol syrup or tablets is recommended.

c. Dietary advice.

In every case of diarrhea with some dehydration or no dehydration, continued feeding is recommended.

d. Counseling to the caregiver/ mother

Counseling is giving advice to mothers in concerns with following aspects.

1. Counseling on when to take the child to the medical care. For diarrhea: (a) passing of many watery stool; (b) increasing thirst; (c) developing fever; (d) refusal to drink or to eat; (e) repeated vomiting; (f) blood in the stool; (g) no improvement.
2. Verification by physician of whether the mother understood the advice given.

Total number of cases to be observed is 117 for 39 total private physicians (three cases per physician). First three cases will be selected to be observed.

(2). Another measurement is **attitude of the private physicians towards management of the childhood diarrhea**. Attitude is one of the influencing factors leading to behaviors. By measuring attitudes of the private physicians, it can be related to the performance score and estimate strength of their correlation.

3.6.6. Indicators of variables

Table 3.1. Specific indicators of the outcome variables

Sr.	Variables	Operational definition	Indicators
1.	Quality of care	Performance of the private physician in the primary health care management of childhood acute diarrhea that include rehydration therapy, prescription of drug, dietary advice and counseling to mother/caregiver according to WHO guidelines.	<ol style="list-style-type: none"> 1. Percentage of cases of childhood acute diarrhea among total observed managed cases with agreement to WHO guidelines. 2. Percentage of the physicians whose management agrees with the WHO guidelines. 3. Percentage of the physicians whose rehydration therapy agrees with the WHO guideline 4. Percentage of the physicians whose prescription of drugs agrees with the WHO guideline. 5. Percentage of the physicians whose dietary management agrees with the WHO guideline. 6. Percentage of the physicians whose counseling behaviors agrees with the WHO guidelines.

2.	Attitudes of physicians towards management of acute diarrhea in child.	Average attitudinal score calculated by using 18 statements in a Likert attitudinal scale format	Percentage of the physicians whose attitudinal score is more than 3.
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3.6.7. Data collection method and instrument

1. **Observation.** The performance will be directly **observed** at the time of clinical encounter with use of trained observers who are the final year students from Institute of Community Health (IOCH). The consultant pediatrician from Insein General Hospital (IGH), which is located in the same district, will train them to use an **observation checklist** (appendix 1) developed according to WHO standard guideline of diarrhea management.

Either direct observation or retrospective review of the records or documents can assess the performance in the management of diseases. But direct observation can assess the individual component of the management especially dietary advice and counseling to the mother that can not be found in record review. In addition, chance of missing data arising from improper keeping of records by physicians, can be avoided. The reliability of data is better than record review to achieve comprehensive profile of management. Information cannot be missed under careful observation. But there may be bias (Hawthorne effect) because of direct observation. The resultant performance may be different from the usual performance. So in this case, the quality of performance can be overestimated.

Role of observers is also important to note the management carefully. The observers are final year students from Institute of Community Health. They already have some clinical knowledge about diarrheal disease management. They will be trained about standard management of childhood diarrhea based on the WHO manual for physicians and other senior health workers.

2. Self-administered questionnaire (Appendix 3) composed of three parts: part (A) asking about background characteristics of the respondent physicians; part (B) is for asking about past learning experiences within one year and their feeling about continuing learning for the improvement of quality of care in their practice. Part (C) is to determine the attitudes of respondent physicians. It composed of 18 questions based on (1) general attitudes towards the disease problem (2) attitudes towards essential components of the management.

3.6.8. Analysis of data

After data collection, those will be analyzed by quantitative analysis.

3.6.8.1. Analysis of the data obtained from observation checklist

For the analysis of observation checklists, there are two types of measurement will be come up after data collection. One is the percentage of physicians who perform the action described in the observation checklists. Another one is the general management score calculated from correct actions. The management guideline of diarrhea recommended by WHO was used as a standard. One correct action takes one mark. So there are four marks in total score for four essential components of the management.

Every component is equally essential for proper management. It can give rise to percentage of physicians who have various score value.

Change of percentage of physicians for each item and change of total management score can be compared between intervention and control group using two-sample t-test.

Scoring system for observation checklist

Total score for the correct decision and management is 4 resulting from each items. The correct decision for one item is given 1.

a. For rehydration therapy = 1

Prescription of ORS with WHO recommended formula or other home made salt-containing fluid e.g. salted rice water, salted yogurt drink, vegetable or chicken soup with salt achieve score 1. Prescription fluid not recommended in the WHO guideline or no rehydration at all will get score 0.

b. For prescription of drugs = 1

The antibiotics are not recommended in WHO guideline. Adsorbents are also contraindicated. . Only antipyretic drug such as paracetamol can be given when there is fever. Therefore if all the items prescribed adhere to the WHO guideline, a score of 1 will be given. However, if any of the drugs prescribed do not comply with the guideline, the score given will be zero even after some items may be in accordance with the guideline.

c. For dietary advice = 1

If mothers or caregivers are encouraged to continue feeding as usual, the action will attain score 1.

b. For counseling to the mother = 1

If mothers or caregiver are given information on the conditions that require to take the child to a health worker, and the understanding is verified, the action will attain score 1.

Conditions that require to take the child to a health worker are:

- passing of many watery stools;
- repeated vomiting;
- becoming very thirsty;
- eating or drinking poorly;
- developing fever;
- blood in the stool; or
- the child does not get better in three days.

- After calculating the change in the mean scores of the intervention group and control group, two-sample t -test can be used to verify the statistical significant difference. The most significant fact in scoring system is that for every items the score will be zero if there is an action contradictory to the guideline. For example, for rehydration item the physician gave government ORS as well as commercial ORS. In this case, the actions are contradictory to each other. The prescription of government ORS agrees with guideline but prescription of commercial ORS does not agree with the guidelines. Therefore the score will be zero for this item. Another example may be cited for drug prescription. The physician gave antibiotics to a child with acute diarrhea. And then because the child was febrile, he also gave paracetamol. So there were two actions contradictory to each other.

Prescription of paracetamol is correct according to the guideline. But the prescription of antibiotics is incorrect. Therefore the score will be zero.

3.6.8.2. Analysis of self-administered questionnaire

For part A, the background characteristic e.g. age, year of graduation, and duration of general practice can be shown by **descriptive statistics**, mean or median.

For part B, it is only for **descriptive** purpose to help the education group identify the need and plan the education program.

Part C, it is attitudinal question. The final product of the question is the score of the attitudes ranging from 18 to 90. Total mean score and score for each item can be achieved. The comparison of mean score difference between intervention group and control group can be done using two-sample t-test.

3.7. Intervention

The education committee will be organized before the onset of the study. The sponsoring organizations for the study are the Myanmar Medical Association (MMA), Department of Health (DOH) and Department of Medical Science (DMS). It aims to assess the quality of care and need of continuing education and to test the effect of education program in a pilot situation and to suggest the implementation of large scale continuing mechanism incorporated in the existing process of annual licensing and periodic registration scheme.

3.7.1. Characteristics of the intervention

Followings are the characteristics of the intervention.

a. It is using various elements to enhance the effectiveness of the intervention. It includes predisposing element such as disseminating the information in the form of printed material, reinforcing element such as giving feed back information from the findings of before- intervention assessment, and using educational influential such as consultant pediatrician, public health personnel.

b. The workshop will be planned and carried out in a way of group learning, identification of the problems and discussion about solution by the participants themselves. The discussion will be interactive rather than didactic approach.

3.7.2. Expected outcomes and benefits

From this intervention following outcomes and benefits are expected.

a. The quality of care in the management of diarrhea of under-5 children can be found out, and the perceived-needs of continuing education by private physicians can be detected.

b. The performance of private physicians will be improved according to standard guideline, and thereby the quality of care in the management of the diarrhea in the children under-5 leading to the reduced complications of diarrhea in those who seek care from private physicians being intervened.

c. The prolonged isolated private physicians can be motivated and stimulated to continue their learning to keep up to date with changes in the environment and new knowledge.

d. The linkage between private physicians and public health system can be established by education forum from which further education activities can be continued to improve the quality of care of private physicians. The involvement of private physicians in the disease control activities could be fostered and enhanced through the linkage achieved by cooperation and motivation in the education program.

e. The private physicians may act as a change agent to diffuse health knowledge into the community after repeated exposure to evidence based medical practice and latest trend of medical advances and cost-effective measures.

f. The lessons learned from this study in a pilot situation can be helpful for the outset of large-scale intervention.

3.7.3. Potential problems

The success of implementation of the program depends on the result of coordination and cooperation between MMA, DOH, DMS and private physicians so that smooth communication with mutual understanding among department and organization is essential. The potential problem might be found in the relation between private physicians and public health system. Sometimes it is denial and critical to each other making disturbance to establish effective communication between two sectors. Therefore the relation between private and public sectors should be based on supportive and

friendly atmosphere to encourage the cooperation and coordination by recognition roles of both sectors.

Contamination is also a possible problem when there is exposure to same information in control group as in intervention group. It may result from exchange of information between intervention and control at a common venue. But it is less likely because there is no common venue for both intervention and control district.

3.8. Activities

1. Proposal submission and approval

The proposal will be submitted to the MMA. After approval, the following activities will be planned and carried out.

2. Formation of supervisory group, data collection group, and education

Group After approval of proposal the MMA will initiate and coordinate the DOH, and DMS to form the supervisory, data collection and education group within one week.

3. Communication to the private physicians who are to be studied

The private physicians will be informed to cooperate in the study through respective township health department, which is responsible for the supervision of private physicians. Usually those private physicians are collaborative to health authorities. All the private physicians are members of Myanmar Medical Association, which is powerful organization and decisive body to adopt some measures for the sake of community and professionals.

4	Training of student observers																			
5	Preparation for observation checklist and interview questionnaires																			
6	Pre-testing and revision of instruments																			
7	Data collection (before intervention)																			
8	Data analysis																			
9	Preparation for education workshop																			
10	Implementation of workshop																			
11	Data collection (after intervention)																			
12	Data analysis																			
13	Report writing																			
14	Submission of the report to MMA																			

7. Data collection (before intervention)

Data collection will be start 3 week after the beginning of the study. The student observers have to visit the assigned clinics to which information has been given during the clinic hour and wait for the diarrheal cases. When the under-5 children with diarrhea come, the management provided by the physicians has to be observed according to the checklist. The interview will be done during intervals when the physicians become free and there is no patient to see or in the moment when the clinic is about to close. The interview takes only 5 minutes in maximum.

8. Data analysis (Before intervention)

Data analysis will be done by data collection group and will take one week.

9. Preparation for continuing education workshop.

The education group will undertake it after completion of the data analysis with use of information resulted from data analysis. The group will plan the workshop and determine the form and approach of delivery focusing on the problem based learning, interactive, motivated and active group learning theory. The printed information will be prepared to distribute in the workshop. Deliberately the workshop will include predisposing element such as distribution of printed standard guideline, reinforcing element such as feedback about the findings of shortfalls of their management on the studied cases and educational influential pediatrician's recommendation on the management. Giving information about current situation of the severity and magnitude of the problems and discussion about solution by themselves. It will take about one week.

10. Implementation of workshop.

Implementation of workshop will take only one week. It will be carried out in morning hour starting from 9 a.m. to 12 noon aiming to avoid the clinic hour of private clinics. Each session will take only 50 minutes and 10 minutes for break.

11. Data collection (after intervention).

The data collection to assess the effect of the intervention will be carried out 4 weeks after the intervention with use of same instruments as in the data collection before intervention. It will take two weeks.

12. Data analysis(after intervention)

To assess the outcome measurement whether they have significant changes compared to the finding obtained from the data collection before intervention. Time allocated for the data analysis is about one week.

13. Report writing.

Final report will be written by researcher to submit to the MMA. Not only findings but also the suggestion based on the analysis of the data will be included for further outset of larger scale study to produce the valid and firm evidence for future plan to improve the quality of care in private physicians. It will take one week.

14. Submission of the report to the MMA.

3.9. Ethical issue

There are no serious ethical problems in the study. The only issue is that the observation of the management in the clinical encounter may need prior informed consent of the patient and permission from the respective physicians.

3.10. Manpower requirement

a. Supervisory group

For the study following personnel are required for the program operation and supervision.

1.	Representative from MMA	1
2.	Representative from DOH	1
3.	Representative from DMS	1
4.	Medical superintendent IGH	1
5.	Township medical officers from study townships	2
6.	Total	6

b. The data collection group

The data collection group will undertake the data collection and analysis. Composition of data collection group will be as follows.

1.	Research officer from Health System Research Unit	1
2.	Field supervisor lecturer from IOCH	1
3.	student observers	20
4.	researchers	1
5.	Total	23

c. Education group

The education group will operate the education workshop program. Group member will be as follows.

1.	Consultant pediatrician	1
2.	Education specialist from DMS	1
3.	Public health specialist of diarrheal disease project from DOH	1
4.	Health education specialist from DOH	1
5.	total	5

d. Total manpower for the whole research group

1.	Supervisory group	6
2.	Data collection group	23
3.	Education group	5
4.	total	34

Among total 34 members of whole research group those except 20 students of IOCH are government employees and no need to pay for the program activities.

The intervention is the continuing education program in the form of workshop lasting 7 days using interactive approaches, and group learning. The workshop will be problem solving approach rather than didactic lecture. The finding of study on their performance will be reviewed and their need will be identified. The strategies for the solution of the problem will be searched by discussing each other and facilitated by the expert opinion from the consultant pediatrician. The public health significance of the

diarrheal problem will be informed and the importance of involvement of private physicians will be focussed.

3.11. Technical requirements

The intervention program is the education program using multiple strategies to make significant impact within a limited time. Thus the planning of the education program requires technical expertise from DMS. Careful application of research methodology is also essential.

3.12. Budget requirement

The budget for the study will be sponsored by **MMA research fund**.

No.	activities	cost	remarks
1.	Data collection expenses		
	a. preparation for checklists and questionnaires		
	30 kyats x 30 copies x 2 times (before and after)	1800	
	b. daily allowances for the observers		
	100 kyats x 20 students x 4 days	8000	
	c. training expense for the observers		
	stationaries, breakfast and lunch, and tea breaks		
	1000 kyats / day x 3	3000	
	d. data analysis		
	Stationaries, computer processing,		
	3000 kyats / time x 2 times (before and after)	6000	
	e. Report writing	1000	

	Total cost for data collection	9800	
2.	Education workshop expenses		
	a. stationaries, lunch and teabreaks		
	1000 kyats / day x 5 days	5000	
	b. production of pamphlets		
	30 kyats x 40	1200	
	c. transport for the educators		
	300 kyats / day x 5 days	1500	
	total cost for education workshop	7700	
3.	General	2000	
4	Grand total cost	29500	4436 US

Official exchange rate 1 US\$ = 6.65 Kyats

The personnel except 20 students who will do the observation are the government employees and no need to pay for the responsibilities that they undertake. The budget can be divided into three main categories: for the data collection, for the education workshop, and general. Estimated expenditures are described in the above table.

3.13. Sustainability of the program

This study is testing the effectiveness of the education program in the form of workshop using multifaceted approaches potentially able to change the practice of the physicians in a pilot situation. Lessons learned from the study can be helpful to develop continuing education forum in every region that is essential for the improvement of the quality of care given by private physicians who are isolated and out of reach from formal academic activities. For the sustainability of the continuing education to improve the

quality of care, there are two essential requirements **the political commitment** to support the program and provision of necessary assistance for the further extended program specifically to adopt the regulation to make that every private physicians have to take appropriate continuing education activities as a requirement for licensing and registration. The another requirement is **motivation of private physicians** to participate in the continuing education program and the ability to develop self-learning process among all the professionals. Financially the CME team can stand on self-help system because members can contribute for the activities from which they benefited to improve the quality of their practice.

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