An approach to the development of a distance education module

Thushara E. I. Fernando[1], Rohini De A. Seneviratne[2], and K.C.S. Dalpathadu[3]

Journal of the College of Community Physicians of Sri Lanka 1997; 2 : 14 - 21.

Abstract

Objective: To develop Modules on Distance Education (DE) for Public Health Midwives (PHMM) on the postpartum care of the mother and the care of the newborn.

Methodology: In the preparation of the distance education modules a comprehensive needs assessment was carried out in order to identify the training needs of PHMM.

A nominal group discussion was carried out to determine the most important and appropriate study topics for the programme. A partial participatory method was used to develop the curriculum. The distance education modules were prepared by a team of authors adhering to the standards and the principles of distance writing. The modules were pre-tested on PHMM and appropriate changes were made.

Results and Conclusions: Two modules were developed on, "Postpartum care of the mother" and " Care of the newborn". The methodology adopted was found to be effective in the development of the modules.

Key words: Distance Education (DE), Continuing Education (CE) , development of modules

[1] Medical Officer, National Institute of Health Science, Kalutara
[2] Senior Lecturer, Department of Community Medicine, Faculty of Medicine, University of Colombo
[3] Deputy Director-General (Planning, Management Division), Ministry of Health

Introduction

The efficient and smooth functioning of the health programme depends largely on the timely availability of appropriately trained manpower in adequate numbers. The Public Health Midwives (PHMM) play an important role in providing grass roots level health care to mothers in the antenatal, natal and post-natal period throughout the country. Although the past few years have witnessed a marked improvement in the quality of the basic training of midwives there is a need for systematic Continuing Education (CE) to ensure standards in professional practice of PHMM.

CE can be defined as the experiences after initial training, that help health care personnel to maintain or ascertain competencies relevant to the provision of health care (1).

Among the different methods that are available for CE, self-study is accepted as a recognized method throughout the world. Health workers learn through self-study as well as through contact with facilitators and colleagues. Journals, books, the print and electronic media, specifically designed self-learning packages and correspondence courses, play an important role in providing information. The latter has recently become popular as "Distance Learning" or "Distance Education".

Distance learning as a method of Continuing Education

Of the many developments in medical education that took place in the last two decades, it has been stated that the concept of

Distance Learning can be considered as one of the most important developments (2). It is described as "the sort of study not led by teachers present in classrooms but supported by tuition through an organization at a distance from the student" (3). This method of imparting knowledge and skills is rationalised by the application of division of labour and organizational principles as well as by the extensive use of technical media, especially for the purpose of reproducing high quality teaching material which makes it possible to instruct a large number of students at the same time wherever they live (4).

The need for Distance Education in Sri Lanka for Public Health Midwives

There are many PHMM throughout the country who have not been subjected to any type of systematic CE in the form of in-service training, or otherwise since their initial training. Lack of new knowledge and competencies bring about frustration, lack of confidence and a sense of inadequacy among such individuals. These, in turn, lead to deterioration of quality of performance and functions.

In Sri Lanka, other than the national training institutions, other training centers scattered elsewhere in the country do not possess adequate resources to carry out CE programmes locally. At present in-service training programmes for midwives are few. Programmes that have been conducted for them have taken the form of workshops for a limited number of participants. Up to now no in-service training programme has been designed or conducted using Distance Educational Methods.

One cost-effective way to undertake such training on a regular basis for a large number of health care workers within a short period of time and with limited resources is by a distance teaching method. This will further ensure the uniformity of teaching. In addition, this type of programme would lead to the development of capabilities of midwives with minimal service disruption in the periphery.

An experimental study was carried out to determine the outcome of a distance education programme on knowledge, attitudes and performances of PHMM in the post partum care of the mother and on the care of the newborn. This paper describes the methodology adopted for the development of distance education modules in the initial phase of the study.

Methodology

The following strategies were followed in preparing these modules.

Assessing the training needs for continuing education

In this study a questionnaire designed by Abbatt and Mejia was used to assess the training needs of a sample of PHMM of the districts (1). A needs assessment was carried out in the fourth quarter of 1995 on a randomly selected 10% sample of PHMM attached to the Divisional Director of Health Services (DDHS) areas of Kalutara and Galle Districts. These areas had been identified as study areas. A short, self-administered questionnaire was used to assess the training needs of PHMM.

In addition, interviews were conducted with the two Deputy Provincial Directors of Health Services of the two districts, ten randomly selected Divisional Directors of Health Services from the two districts and five PHM trainers attached to the NIHS Kalutara, to find out their views on appropriate study topics for this programme. Based on the outcome of the questionnaires and the interviews, a list of topics was prepared and was utilized for final selection of the topics for the study.

Selection of the study topics

A nominal group process was adopted for the final selection of appropriate study topics (5). A formal meeting was held at the National Institute of Health Science (NIHS), Kalutara, with key personnel involved in the training of PHMM, immediate supervisors of PHMM and with PHMM themselves. Considering the importance, relevance, timeliness of the topics and the feasibility of them to be addressed for CE through a DE programme, the group selected "postpartum care of the mother in the field" including "postpartum contraception" as the most important topic.
In order to make the subject more comprehensive and relevant, it was unanimously decided to incorporate "care of the newborn in the field".

Development of the curriculum

A curriculum was developed for the continuing education programme on the selected topics that would suit the Distance Education method. In the development of the curriculum for this programme the partial participatory approach was followed. As the first step in the development of the curriculum to be used for the DE programme, a meeting was arranged at the NIHS Kalutara. In the development of the curriculum, a group consisting of trainers, trainees, a curriculum expert and the investigators participated.

The group first considered the knowledge, which they felt a PHM should have, in order to carry out her duties with competence in relation to the identified topics for DE. After considering the knowledge component, the group considered the tasks a PHM needs to perform with competence in order to achieve the objectives. Next, the group identified the skills a PHM should possess to perform these tasks with competence. Developments of positive attitudes among PHMM in relation to the subject areas too were considered.

The educational objectives were formulated and the content areas required to achieve the educational objectives were identified and listed. Appropriate techniques and methods for evaluation were also identified and the curriculum was developed.

Preparation of the Distance Education modules

It was decided to prepare two modules to be used for the DE programme. The first module, which was on the post partum care of the mother in the field, was prepared in two parts. The first part consisted of "postpartum care of the mother" while the second part consisted of "postpartum contraception". The second module was on "care of the newborn" .
The preparation of these modules was done in three phases.

In the first phase, which was called the academic preparation phase, the drafts of the modules were prepared by the investigators with a group of trainers.

In the second phase, which was called the field-testing phase, they were photocopied and field-tested. Following the field testing, modifications were made taking into account the shortcomings identified during the field-testing.

In the third phase, the final drafts were typeset and duplicated by digital duplication.

Academic preparation phase

The investigators and two PHM trainers who were trained in the preparation of written Health Learning Materials (HLM), served as a committee for the preparation of DE modules. The team was responsible for the preparation of the study units incorporating the curriculum.

Each chapter of the module contained the educational objectives, an introduction, the

contents with important areas highlighted, a summary and few review questions. A few short questions based on the content immediately covered were included in each chapter. These were utilized in the evluation of the programme to check for compliance. Each module also contained an assignment (tutorial) printed on a blue coloured paper for submission. It contained ten short questions covering the main content of the module.

Preparation of DE material

Although the members of the committee were skilled in the preparation of written HLM, they had not been exposed to the preparation of material for DE or "distance writing". A one day workshop was arranged in June 1996, at the NIHS Kalutara with the Educational Technology Unit of the Open University of Sri Lanka (OUSL) on the "Principles of Distance Writing".

The first session of the workshop was spent on three presentations made by the resource personnel on principles of Distance Writing. The investigators and the members of the committee presented the first drafts of the course material developed, during the second session of the workshop. They were given the opportunity to modify them under close supervision and guidance of resource personnel of the OUSL. The first drafts of the modules were finalized. These drafts were prepared in Sinhala by the group. The DE modules were designed with a view to imparting the content of the core-curriculum i.e. the "Must Know" and "Good to Know" areas.

These drafts were further discussed with the other PHM trainers of NIHS and revised, until the final draft was prepared. These units were later edited for accuracy of contents. Editing for grammar and language was done by a retired school principal skilled in editing Sinhala documentation.

Special features of the Distance Education modules

The following principles were followed in the development of the distance learning material.

They are:

1. Emphasis on the depth of knowledge a PHMM should possess
2. Presentation in simple Sinhala language with sufficient explanations.
3. Statement of educational objectives clearly at the beginning of each chapter.
4. Inclusion of relevant diagrams to facilitate learning.
5. Inclusion of a summary and a few exercises to be completed in each chapter by the PHMM for self-assessment.

The format of Distance Education modules

Each module consisted of a general introduction, a content page and few chapters in which the content was spread out for easy learning.

A chapter started with the learning objectives and the content was presented in a "learner friendly" manner under topics and subtopics. Relevant diagrams were also included. Each chapter had a summary and ended with a few exercises to be answered by the PHMM for self-assessment. In addition, the important facts were highlighted, and presented in tables, boxes etc., for easy learning.

Each module was supplemented by a tutorial, consisting of ten short questions. These questions were set from the subject matter covered in the modules.

The tutorials were printed in blue coloured paper and were to be distributed along with each module. These tutorials were to be

answered by the PHMM and returned through the DDHS of the area for correction . They were to be corrected by a group of examiners and returned to each PHM.

Field testing of Distance Education modules

Once the drafts were prepared, they were field tested on ten PHMM of the Kurunegala District in the North Western Province. This area was not a selected study area. Three important aspects of a written manual, "usability", "accessibility" and "readability", were looked into in the field testing (6).

Usability - Are the contents relevant and at the 'right level' for the reader?

Accessibility- Is the information well structured and easy to find?

Readability - Is the text readable ?

In order to test the "usability" of the modules, data were collected from PHMM during the field testing on 'relevancy of the information', 'quality of the contents' and on the presentation of the contents to suit the 'right level' of the reader.

Readability was tested in two ways. The first 25 words used in the text which were assumed to be difficult to understand were selected by the investigators. The PHMM were asked to explain each word as they understood it. In the second method which is known as the "Cloze test", a passage of the text containing approximately 300 words was selected and was typed out on a separate sheet of paper. Starting from the fourth line, every eighth word was erased. This page was later photocopied and the copies were given to the participants who were instructed to fill in the blank spaces with the words that are missing. The percentage of correctly filled blanks (including the ones given with a similar meaning) was calculated. This was found to be 82%.

In addition, the PHMM were also requested to give a feed back on these modules and the time required to study them. Once the field-testing was over, the modules were further modified. The final drafts were given for typesetting. The page layout was done and the page design work was completed, the final artwork was duplicated by digital duplication at the National Institute of Health Sciences, Kalutara. The books were bound with cover pages of different colours for easy identification and to make them look attractive. The monthly tutorials too were field tested and printed in blue coloured paper and incorporated into the relevant module.

Discussion

Continuing Education

The need for Continuing Education has been recognized for a long time. There is an increasing recognition of the need for health workers to continue their education throughout their career. Not only do health workers wish to improve their own skills and competencies, but they also wish to be knowledgeable about the introduction of new technologies and equipment. The changes that take place in health needs and health care policies necessitate continued learning. CE may be initiated by the health workers themselves, by their supervisors, by the managers of the health system or by other agencies such as professional associations.

Among various methods that can be used to provide CE, self-study is accepted as a recognized method throughout the world. Various print media including journals, books and specially designed self learning packages play an important role in providing continuing education.

The characteristic features of DE are separation of learners and teachers whereby the distance is created, organization of education by a providing institution, use of multi-media for learning, occasional opportunities for contact with teachers and fellow students and two way communication by means of different media. Although the development of communication technology, electronics and audiovisuals has encouraged the growth of DE, the print remains the most important medium of DE (2).

Media that can be used in Distance Education

Presently more and more sophisticated modern technology has been used for DE throughout the world. According to Harden (2) the two most important factors which encouraged the development of DE and contributed to its growth, were the development of communication technology, both electronic and audio-visual, and the increased educational sophistication of print. He further states that the print remains the most important medium in distance learning. Wyatt (7) has presented a cumulative list of the various media which are currently utilised in DE. He points out the importance of selecting a suitable medium for DE from all methods. The questions , which Wyatt raises to consider in selecting a media for CE, are,

- For what purpose is the technology being utilised?
- What social, cultural communication factors will affect its opinion?
- Under what conditions will the technology be used ?
- What applications can be drawn regarding the communication
- Characteristics of a media technology system for instructional use?

Selecting a medium for Distance Education

In this study, the print medium was selected as the medium for DE. With the use of print, no sophisticated technology and equipment was required to use the material, and the PHMM were able to get themselves engaged in self learning at a time and place most convenient to them. It was relatively inexpensive, it could be easily distributed and could be kept for reference at a later date.

Training needs assessment

Assessing the training needs for CE is probably the most important function of a system of CE (1). The trainees should play an active part in the planning and evaluation of a CE programme and that a CE programme will succeed only if health workers find it interesting and relevant to their needs. The range of needs can be assessed in various ways. In this study a questionnaire designed by Abbatt and Mejia was used to assess the needs of a sample of PHMM of the two districts (1). The validity of the questionnaire was ensured by field-testing. The assessment was useful in the formulation of a comprehensive list of training needs that was presented at the discussion held to identify the study topics.

Identification of topics for Distance Education

The next important activity performed was to identify suitable topics for the Distance Education programme. In identifying the study topics a nominal group process was selected. In this method the discussion process is strictly separated from the voting process and voting is done anonymously. This depersonalized the process and gave each member an equal vote, regardless of his/her verbal capabilities. The results thus reflect inputs from all members of the group. The series of discussions and anonymous votes help to minimize the chance that the results

will be skewed towards the opinions of one or more dominant personalities. This provided useful means of aggregating individual judgments.

During this process the investigators generated a group discussion on the criteria to be considered in selecting a suitable topic for DE. The criteria were relevance, feasibility, applicability, and avoidance of duplication and ethical acceptability. This was done to assist the members to select a topic that would be suitable for the study.

Development of the curriculum

Programmes in distance mode often adopt the same syllabus and curriculum of conventional face to face training and lay more emphasis on developing instructional materials rather than developing an appropriate curriculum for the mode. The former approach can cause deterioration in the quality of the programme.

It was decided to develop the curriculum on the selected topics that would suit the Distance Education method. In the development of the curriculum for this programme the partial participatory approach was followed. In this method the teachers and trainees worked together to establish needs, identify problems, suggest and evaluate possible solutions and, in doing so, develop the new curriculum.

Preparation of Distance Education modules

The Distance Education learning system consisted of prepared, printed, self-learning material in module form, assignments for submission and contact sessions arranged in the form of monthly conferences.

Preparation of DE modules needed special skills. The inputs of the resource personnel of OUSL helped to strengthen the 'Distance Writing' skills of the authors of these modules. The modules acted as the teacher/trainer. In preparing the modules steps were taken carefully to include all the good characteristics of a teacher while excluding the bad characteristics.

The modules that were prepared were field-tested. The shortcomings of the modules found in the field-testing were taken into consideration when the final manuscripts were prepared.

Testing for *usability*, *accessibility* and *readability* helped to determine the suitability of the modules for PHMM.

Accessibility is connected to the "way the contents are presented" (7). The health worker faced with new written materials must be able to find "their way within the material" (7). Emergency information, especially, must be easy to find and available when needed. The order of the contents must be logical and users must be able to quickly find the section they need.

Readability is considered as a very important quality for written materials (7). Steps were taken to determine the readability of the text by using the Cloze test and by the standard method.

Conclusions

The methodology described in the paper was used to design and develop Distance Education Modules for PHMM on post partum care of the mother and care of the newborn in the field.

The training needs assessment and the identification of the study topics was carried out using available resources. The curriculum was developed using a partial participatory approach involving trainees, trainers and supervisors. The distance education modules were prepared adhering to the accepted standards and principles utilizing the expertise

and assistance of medical and paramedical personnel available within the health system. The findings revealed that DE could be effectively used as a method of Continuing Education to improve knowledge among Public Health Midwives.

The modules that were prepared were utilized in an experimental study to evaluate the usefulness of a distance education approach for CE of PHMM. The paper on this phase of the study is under preparation for publication. The modules are currently being used to provide inservice training for the Public Health midwives of the study areas in the Kalutara and Galle Districts.

References

1. Abatt FR, Mejia A. Continuing the education of health workers. World Health Organization. Geneva 1988; 1-15.
2. Harden RM, Distance learning as a method of continuing education. Medical Teacher 1988; 10: 2-4.
3. Holmberg B. The development of distance education research. International Perspectives of Distance Education. London 1983; 40-58.
4. Peters O. Distance teaching and industrial production. Distance Education International Perspectives. Kent 1983; 18-26.
5. Varkevisser CM, Pathmanathan I, Brownlee A. Designing and conducting health system research projects. Canada 1991; 127-128.
6. Folmer HD, Moynihan MN, Mcomm HMA, Schothorst PM. Testing and evaluating manuals. Amsterdam 1992; 33-44
7. Wyatt RB, New technology and distance learning; A model for innovation. School Library Media Quaterly 1988; 6: 169-172