DEPARTMENT OF COMMUNITY HEALTH

FACULTY OF MEDICINE

ADDIS ABABA UNIVERSITY

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TRAINING OF PRIMARY SCHOOL TEACHERS ON HEALTH AND ITS EFFECT IN SCHOOL HEALTH EDUCATION

By:

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements for the Degree of Master of Public Health.

May, 1994

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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ACKNOWLEDGEMENTS

I am very grateful to the International Development Research Centre of Canada (IDRC) which, through the McGill-Ethiopia Community Health Project, funded this research and the Department of Community Health (DCH)for material assistance.

I am indebted to Professor Dennis Carlson of the DCH, Addis Ababa University, my primary research advisor for his deep interest in the research work and his continuous encouragement and field supervision.

My appreciation is also extended to Dr. David Zakus, Director, McGill-Ethiopia Community Health Project also my research advisor, for reviewing this work and for his close supervision and support. Special thanks and appreciation also goes to Dr. Derege Kebede, Head, DCH, for his advice and consultation on statistical analysis.

I would also like to thank Drs. Yemane Berhane, Mesfin Kassaye, Salley Stansfield and Birhanu Demeke of the DCH for reviewing the document. My appreciation and special thanks goes to Dr. Wehib Bekri, North Shoa Zonal Health Manager for facilitating transportation, personnel and administrative affairs in the data collection process. I thank Ato. Mekasha Belet and W/o Yelfegn Habtu of the Institute of Curriculum Development and Research (ICDR), Ministry of Education (MOE) for providing reference materials.

I am very grateful to the Zonal and Woreda MOE officials and schools for their co-operation in providing the necessary information.

My thanks also goes to W/t Yemisirach Ashenafi for typing this manuscript . Finally, my gratitude is extended to Ato Tilahun Yimaldu, Yimenu Adane and Mulugeta Zewde, my research team members for their determined activity in the data collection process.

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LIST OF ABBREVIATIONS

CHS	-	Community Health Service
CSHE	-	Comprehensive School Health Education
HFA/2000	-	Health For All By the Year 2000
IDRC	-	International Development Research Centre (Ottawa. Canada)
ICDR	-	Institute of Curriculum Development and Research
MOE	-	Ministry of Education
MOH	-	Ministry of Health
NGO	-	Non Governmental Organization
PHC	-	Primary Health Care
SCF/USA	-	Save the Children Federation/USA
SHE	-	School Health Education
SHEP	-	School Health Education Program
TTI	-	Teachers Training Institution
UNICEF	-	United Nations' Children's Fund
UNESCO	-	United Nations' Educational. Scientific and Cultural Organization
UNFPA	-	United Nations' Family Planning Association
WHO	-	World Health Organization

ABSTRACT

A retrospective-cohort study was carried out in Northeastern Ethiopia to assess the impact of health training of primary school teachers on health knowledge and practice of their students with regard to personal hygiene and the environmental health conditions of the schools.

The required information to assess knowledge was collected using a pretested questionnaire. Observation formats were developed to assess the hygienic status of the students and environmental health situations of the schools. Focus group discussions were conducted with the trained teachers on how to improve the school health education activities. Data analysis was carried out using EPI-INFO version 5 and SAS computer statistical packages.

The results showed improvement in the total mean knowledge score of teachers who received training compared to the control groups (F-stat. 3.47, P:0.04). Though the difference was not statistically significant. Students of the trained teachers also showed a higher mean knowledge score compared to both control-1 and control-2 groups P: <0.001). The Mean hygienic score of students of the trained teachers was found to be higher compared to the students in the comparison groups. ($p < 0.001$). The environmental health status of the schools with trained teachers was better than the schools without trained teachers.

The study has demonstrated the positive impact that training school teachers have in improving the health knowledge and practice of the school community. Recommendations are given regarding further training of school teachers in health along with the improvement of school sanitary facilities and the inclusion of health education in primary school curriculum.

1. INTRODUCTION

Much can be achieved in the primary health care field through collaboration with school teachers and others involved in primary school education. The goals of Education For All and Health For All (HFA) are inseparably linked. Both aim at equity and must be achieved concurrently. Good health is essential for effective learning and education is a powerful means of enabling children and adults to attain and maintain health and well-being.

School age children number over a thousand million world-wide (one quarter of the worlds' population). Of these young people, 80% live in developing countries where four out of five now attend school (1). In developing countries, about 80% of children now enrolled in primary schools (age 6-14), and 60% complete at least four years of school (2). According the report of MOE in 1992/93 there were a total of 1.9 million children enrolled in primary schools in Ethiopia (3). Furthermore, it is a captive audience and hence cost-effective to reach when they are part of the educational system.

At the international conference on Primary Health Care (PHC) organized by the World Health Organization (WHO) and United Nations' Children's Fund (UNICEF) in Alma-Ata, USSR in 1978, it was affirmed that "schools could indeed provide efficient means of educating young people on major health issues and of ensuring that young people are educated to have good understanding of what health means, how to achieve it and how to contribute to social and economic development" (2). More recently, the report of the

technical discussion on the health of youth presented to the Forty-second World Health Assembly (1989) highlighted that "promoting health in and through schools is a major challenge. It can only be met through collaboration between the education sector and the health sector and with assistance from related local, national and international organizations, policy makers, funding sources and Non Governmental Organizations (NGOs)' (2).

UNESCO and WHO have been working on school health issues since the 1960's. Along with curriculum development, much attention has been given to the relevance of health education to local conditions and needs. There has been no real consensus as to what primary School Health Education (SHE) actually means within the context of Third World school systems (4). Teachers are not given adequate basic and on the job training. Teaching aid materials and books are non-existent or have not reached all schools. The school environment is lacking basic facilities that could support practical health education.

Understanding all the problems and constraints in school health education, important questions to be asked are: what kind of training and support should be given to school teachers in Ethiopia to prepare them for health education? Could health training of school teachers lead to the development of better knowledge and attitudes that can be transmitted and ultimately affect the knowledge and practices of their students? and could the training improve the school environment? These are important practical questions that need to be answered.

1.1. Statement of the Problem

The health and nutritional problems of school-age children in developing countries have always been there, beckoning for attention of the international community. Malaria, under and malnutrition, intestinal parasitises, respiratory infections and diarrhoeal diseases have for many years been and, continue to be, common reasons for poor growth and ill health among school children, many of whom have had to learn to live with morbidity (5).

There are too few children throughout the world who have access to school health education that provides organized, sequential, developmentally appropriate learning experiences that help students at every level to acquire the knowledge, attitudes and skills needed to avoid a broad range of important health problems (6).

Health education is of particular importance in developing countries, where a vast amount of illness is caused by a lack of knowledge and simple corrective practices related to health and nutrition. In these countries the school system must assume primary responsibility for communicating health information to children since most parents are poorly educated and know very little about health. The health care system, for its part, also lacks the resources to conduct sufficient health education for adults or children.

In Ethiopia and other developing countries where the school dropout rate is very high. early introduction of health related instruction will help in the students' future lives as adults and parents. This is particularly true for women. of whom the majority will drop out after few years of primary schooling since it is they who most often provide health care in the home. They should be reached early with due emphasis.

2. LITERATURE REVIEW

2.1. Historic Development of School Health Education (SHE)

Concern for and action on school health and health education began in Europe and North America after the 1st World war in 1919. In developing countries it became a national concern during the 1950's with the emergence of a number of independent countries (1). In general, countries recognize the need for national and local policies on SHE and for close collaboration between the education and health ministries.

The significance of education for health has been recognized in official documents of WHO dating back four decades. Today's goals for this age group build on the past,and they are more holistic and comprehensive in nature (1).

School health and education form part of the program of UNESCO, UNICEF, UNFPA, WHO and the World Bank. Separately and jointly, these organizations encourage and support regional and national efforts in the area (2).

In Ethiopia, SHE activity was facilitated by the establishment of the Gondar Public Health College in 1954 (7). Schools in the Gondar area served as a training field for health officers, community nurses and sanitation students.

The development of primary SHE curriculum In Ethiopia can be traced back to the workshop held in Ambo in 1984, on the Universalization of the Primary Education and Literacy (UPEL). Among other things, the workshop presented a proposal for the development and implementation of new curriculum materials for

primary schools. One of the major recommendations produced during the workshop was "health survival and welfare needs of children should be given more importance in the curriculum" (8).

Another study conducted by Minas et al. on the implementation of health and nutrition education and its impact on the community. showed that teachers' performances in implementing the health and nutrition topics were inadequate and the status of schools were not conducive to practical application of health education (9).

In 1988 and 1990 similar studies were conducted in Bahir Dar and Ilubabor. respectively. and produced similar results indicating the need to strengthen teachers' knowledge and improvement of school facilities for practical health education (10).

The latest research work by Belete. showed that the overall knowledge of pupils on health and nutrition science was generally unsatisfactory; that poverty and lack of favourable environmental conditions impeded the practical application of the meagre knowledge of people on health and nutrition: and that many of the pupils could not play the role of change agents using health and nutritional information on the practices of their families and communities where they live. The teachers also lack enough exposure to the subject to teach effectively and efficiently (11).

2.2. Rationale and Public Health Significance of SHE

In every nation schools exist within a system and have facilities and trained personnel that are under-utilized to protect and improve the health of communities. They present an excellent

opportunity for helping children to acquire health knowledge, skills and values and thus for shaping a brighter future. As it has been said by the Director General of WHO, Hiroshi Nakajima, "Educating children at school on health should be given the highest priority not only for their health per-se, but also from the perspective of education, since if they are to learn they need to be in good health" (12).

In the PHC strategy, health education plays an important role in assisting individuals and communities to understand and solve their health problems, and to determine their own priorities (13). Health education today must go beyond providing basic information to people. It is part of the process which enables people to acquire the resources, appropriate technologies, skills and political support that make positive changes possible.

Furthermore, Bartlet concludes that the roles of school based health education are: the provision of a fundamental understanding of health and disease concepts to a large segment of the population; the reinforcement of positive health attitudes; and the alteration of concurrent health behaviours for significant health problems (14).

Success or failure in public health will increasingly be determined by communication and education. According to Foege there are two principal reasons for this new primacy (15). The first is that most contemporary health problems in developed and developing countries alike, are amenable to changes in personal and family behaviours resulting from enlightened collective action in

the workplace, the community, or the nation. The second major reason for the growing importance of health education is related to the swift advances currently taking place in society, and the art and technologies of education in communications. School attendance is increasing throughout the developing world which also lends support to the need for CSHE programs, as more children could be reached.

SHE does not only benefit the school community, it can also have substantial impact on the community. In India, with the implementation of a school health program, the immunization coverage in the slum population increased from 20% to 90% (16). This experience in school health education clearly demonstrates that primary schools provide an ideal time and place to prepare children to assume more responsibility for their individual and community health.

In terms of resource requirements, SHE of children and youth is perhaps one of the cheapest and most feasible approaches to improve health which can be applied immediately in most countries (17). Schools offer feasible and systematic access to children (18). Thus, it is important for the world's adults of tomorrow, if we want to move towards the goal of HFA by the Year 2000, that a well planned, sequentially developed health curriculum, both in and outside the classroom is made mandatory.

2.3. Policies and Practices of SHE

Health instruction should be an integral part of the total curriculum. It can be taught as a separate subject, be infused into existing subjects or both. It can also be enhanced through school and community-based projects (1).

Policies and practices of SHE vary greatly from country to country. In the USA (2) in the 1980's, an evaluation of a CSHE curriculum after four years of implementation showed that children were better informed about general health, health problems and health risk behaviours than were children outside the program. The study showed that SHE is an efficient means of helping children to improve their health knowledge and develop health behaviours as well as of decreasing the likelihood of adopting unhealthy behaviour.

In Denmark health and sex education were to be integrated in other subjects and were expected to be the responsibility of the class teacher (1). In the Philippines, health instruction is provided through character building which is allotted 100 - 150 minutes per week in grades I and II and through science and health classes which are allotted 200 minutes per week in grades III - IV as separate subjects. In addition, around 35% - 53% of the objectives of these core subjects are health related (1). Papua New Guinea has gone about health teaching in schools in a systematic way. Their pupils' books and teachers' guides are good teaching learning materials that use stories, songs and field experiences. They have given health education the importance it

deserves and have made it an examination subject (1).

In 1983 and 1984 in Africa, WHO organized two sub-regional consultations for decision makers in health and education from 23 countries. Following this, action has been initiated in a number of countries to improve SHE (2). Water supply and sanitation along with personal hygiene are now subjects introduced early in primary school health education in many developing countries often as part of a program for providing the water supply and latrine for the school community.

In Uganda all the primary schools have integrated basic health knowledge and skills into the science course. Teachers use especially developed teaching materials and the children are encouraged to share what they learn with friends and family (2). In Libya since 1971, the unified curriculum of the Arab countries has been adapted by the Libyan schools. Here, health is taught as part of science (1). In Lesotho a 10 point education program emphasised the use of toilets, and trained teachers involved in school and community hygiene use posters, slides and printed materials (2). Zimbabwe has an extensive hygiene education program that develops schools hygiene booklets, teacher reference materials, and provincial competitions in poems, songs, essays and drama (2).

In Kenya, health education has been incorporated in core subjects such as science, home science, agriculture, social education and ethics in both primary and secondary schools. Teachers are given in-service training by the MOH and MOE to teach

health jointly (1).

In Ethiopia, no separate course or curriculum has been developed for health and nutrition education. Instead, health topics are incorporated into core subjects such as science, agriculture, and Yenuro Zedey (methods of living); and some reading passages in language (Amharic and English) subjects have been deliberately prepared to discuss specific health issues (11). After evaluating the impact of the curriculum on pupils health knowledge and practice as well as the impact on the community, it was decided to institutionalize the Yenuro Zedey syllabus in 1988 (14).

2.4. Preparation of School Teachers for Health Education

Teaching requires intensive training and a clear understanding of the subject, the learners' backgrounds and value systems. It is a challenging, interesting and exciting intellectual enterprise which demands the use of judgment, imagination, initiative, enthusiasm and creativity (19). Teaching is part of creating a human being.

The development of teachers' professional competence can be obtained through several routes, one of which is training. If teachers are untrained or inadequately prepared, they are likely to lack the confidence and ability to undertake activities other than those which involve formal and "safe" teaching routines.A summary of the findings by Avlos and Hadded states that trained teachers appear to have better professional attitudes and relationships, are less authoritarian, and make better lesson preparations than

untrained ones. They also seem to have more positive effects on pupils achievements than untrained ones thereby demonstrating the need for further training (20).

According to a ILO/UNESCO joint recommendation, the aim of the teacher preparation program is to help each trainee develop the ability to educate others, conceptualize the principles which underlie good and effective human relations, and develop a sense of responsibility to contribute, both by teaching and by example, to social, cultural and economic progress (19).

WHO reports indicate that many existing teacher training programs for health education are neither sufficiently practical nor comprehensive. Instructions are often based on insufficient understanding of health problems and available health services and resources to tackle them with (21). The amount of time given to health education is usually too brief and the instruction often consists only of lectures to large classes. Practice in health education is in most instances either absent or insufficiently planned and executed.

Teacher training, both pre-service and in-service, is one of the major factors in a successful health education program. Education and training to inspire and equip teachers with knowledge and skills to make curriculum exciting is essential. Such training should also include activities to promote the teachers own positive health behaviour to ensure their roles as models.

Teacher training institutions have critical roles to play in such functions as the preparation of teachers for health education

providing technical support to schools and promoting resources and evaluations of school health programs (1). Efforts were undertaken in different parts of the world to train teachers for SHE. In Europe, the European Economic Community jointly with WHO and the Council of Europe have developed a teacher training manual to be used as a prototype for pre-and in-service training in health (2). In Sri Lanka. teacher training in health education takes place for both elementary and secondary levels during pre-service and in-service preparation (1). Teacher training institutions in Syria cover health topics included in the school curricula. There are also short courses on health offered by the MOH for health staff and teachers (1).

In Nigeria health education is included in the teacher training institutions' curricula. Refresher training and other forms of in service training are also provided to teachers. school directors. inspectors and administrators (1). In Kenya teachers are given in-service training to teach health jointly by the MOH and MOE (1).

In Ethiopia. the teachers of primary schools are not trained in health and nutrition training/education: there is no separate course at the Teacher Training Institute (TTI) on these subjects. They are expected to have been exposed to rudimentary health nutrition related lessons in subjects like biology and home economics (11).

2.5. The School Environment As A Practical Learning Place for Health Education

Children in schools face a bewilderingly complex learning situation. They are influenced in countless ways by the varied aspects of the classroom situation. They learn much from the teacher, including many things not prescribed in the curriculum, and some of which neither teacher nor pupils are aware. They also learn from books, from fellow students, and from the physical arrangements of the school. According to Hill, part of what they learn is measurable as specific knowledge and skills, while another part involves changes in attitudes, emotions, social behaviour, and a variety of other reactions (22).

The school is an excellent channel for health education activities. The curriculum makes systematic, planned action possible. But is the school the healthy environment it should be? Is the school a resource for healthy behaviour or is it a risk factor? These important questions were discussed by Leif Aaro, who distinguished two approaches in school-based primary prevention: a knowledge-oriented approach and an ecological approach. The knowledge oriented approach focuses on school hours for teaching pupils what is good and what is bad for them in relation to health, and in the ecological approach the school is considered as a working environment (23). In order to be successful in health promotion SHEPs should be assisted by practical activities in schools which will take the total environment into account.

The school must be regarded as the students' work environment with the goal being the creation of a health promoting school environment for all students. The lack of latrines or their abuse and misuse indicates that implementation of health education and its practice at school and at home is of major importance.

The study conducted by Belete on the evaluation of implementation of health education through new the "Yenuro Zedye syllabus" indicates that out of 34 classrooms observed. 32 had no rubbish baskets. It was in these classrooms that the pupils were taught health lessons about the necessity of cleanliness of living houses. collecting and burning of rubbish and waste materials (11). The problem of realizing basic sanitary practices is also reflected in teachers' knowledge. A similar study conducted by Minas indicates that teachers believe that disposing waste some distance away from the dwelling as being sufficient for environmental sanitation (9).

The presence of basic sanitary facilities and their proper use should not just be part of the schools only. These need to be strengthened in the homes and the communities. Schools can tap community resources for learning about and practising good health habits. and communities can offer key support to schools for the critical role they play in promoting health (1).

2.6. Problems of School Health Education

That children represent our most precious resource is now a standard reference in many national leaders' campaign speeches and

is often quoted in economic and social development plans. According to Ling, all too little evidence exists, however, that such verbal commitment has been translated into strategic planning and subsequent political and financial backing in the implementation of national development efforts (24). Application and transmission of health knowledge mainly by students can be affected by several factors. It is said that since children are open to new ideas they can carry these home to their parents. This is not as easy as it sounds. Many parents hold traditional beliefs that are very different from what is being taught at school. They may resent children who go against these beliefs. Also parents may not have the basic health resources at home to allow the children to practise new health skills (25).

In health education, efforts for children are scattered among various health programs. Reaching them is a task that suffers from defused foci and is virtually left out of health development strategic thinking and planning (2). As stated by Morley, primary school curricula are highly congested in all countries and it seems unfeasible to introduce a new subject (27).

Health education tends to be among the last elements considered in planning of health programs and among the first to be dropped when resources run low (1). Even in highly developed countries in Europe and North America there was a tendency to give health teaching a low priority. Teacher preparation and motivation were not as they should be. Teaching methods were mostly didactic and teaching materials were meagre, and no serious attempt has been

made to involve or encourage students' participation in community health activities. Lack of inter-sectorial collaboration and poor school health environments were also observed (2).

In Ethiopia little attention is given by the MOE in teacher preparation and curriculum design, and by MOH through direct involvement or support of the establishment of such an educational system. The lack or shortage of health teaching/learning materials as well as facilities such as water supply, latrines and waste disposal pits that should have accompanied health lesson were also reported (9).

3. OBJECTIVES OF THE STUDY

3.1. General Objectives

The general objective of the study was to evaluate the impact of health related training of school teachers on the school community, and the environmental health status of the school.

3.2. Specific Objectives

- To assess the health knowledge of primary school teachers trained in health in comparison with untrained teachers.

- To evaluate the impact of trained teachers on school health education activities and their influence on the health knowledge and practices of the students.

- To evaluate the impact of having trained teachers on school environmental health.

4. METHODS

4.1. Study Area and Population

The study was carried out in North Shoa Administrative Zone. Six woredas located on the main Addis Ababa - Dessie road were involved. The residents of the districts are mainly Amharas except for two woredas where Oromos, Affars, and the Argoba minorities also live. The economy is based on agriculture, both land cultivation and animal husbandry. The landscape of the area is hilly and mountainous and has been seriously affected by erosion, over- ploughing and overgrazing. These and other problems, added to the irregularity and shortage of rain have contributed to inadequate food supply, drought and low economic and social development in the area.

There are a total of 100 primary schools and 1,088 teachers in the study area. Teachers due to their wide distribution and their potential support of health activities become important people in the development of Community Health Services (CHSs). They have helped in establishing and strengthening health committees, either through membership, management of drug sales by CHAs, and involvement in vaccination and other community health service activities.

In accomplishing all these activities training of teachers in health was realized to be an important step. In three years period, from 1991 to 1993, 60 primary school teachers were trained. During the investigation, there were only 37 teachers who were actually involved in teaching students. The remaining trained

teachers were either transferred to another area or assigned on administrative activity. Training was conducted by the local MOH. MOE and Save the Children Federation (SCF)/USA staff to enable teachers to identify local health problems and to attain positive health behaviours that can be transmitted to the students through improved school health education. The training was conducted for one week. The topics included in the training program were given in Appendix (5).

All the 37 teachers trained and found to be currently involved in teaching were included in the study as the exposed group. The same number of teachers was selected as control-1 group from the schools in the same woredas. The second control group was identified from the neighbouring woredas to control for the contamination of information from the exposed group. Allocation of the students also followed the same procedure.

4.2. Study Design

The study utilizes a retrospective cohort design which involves the comparison of the knowledge of primary school teachers trained in health with untrained ones and their respective students and schools.

4.3. Data Collection and Measurement

Both qualitative and quantitative methods of data collection were used. The qualitative methods involved focus group discussions with trained teachers about ways of improving school

health education programs. The focus group discussions were conducted after the quantitative data collection process was completed to strengthen its findings. The quantitative methods involve an assessment of the knowledge of both teachers and students in relation to the health topics they were taught. The personal hygiene of students and the environmental health status of schools were also assessed using a check list.

Instruments for data collection consisted of questionnaires to assess the knowledge of teachers and students. Observational checklists were used for assessing the hygienic status of students and the environmental health conditions of the schools. The formats were developed in English and later translated into Amharic for better understanding by the respondents and then were translated back to English to ensure accuracy. Some of the knowledge and activity questionnaires were first designed as open-ended and later made closed-ended after pre-testing.

The questionnaires which were administered to teachers had two parts. The first part evaluated the knowledge of teachers on health issues, specifically of diarrhoeal disease, trachoma, immunization programs, nutrition and community health service development. These topics were selected to see how much of their knowledge was transferred to the students they were teaching and practically observed in the students' personal hygiene and the environmental health status of the schools. The second part of the questionnaire investigated the activity of teachers in providing school health education programs. The students' questionnaire had

two parts to assess their health knowledge and hygienic status.

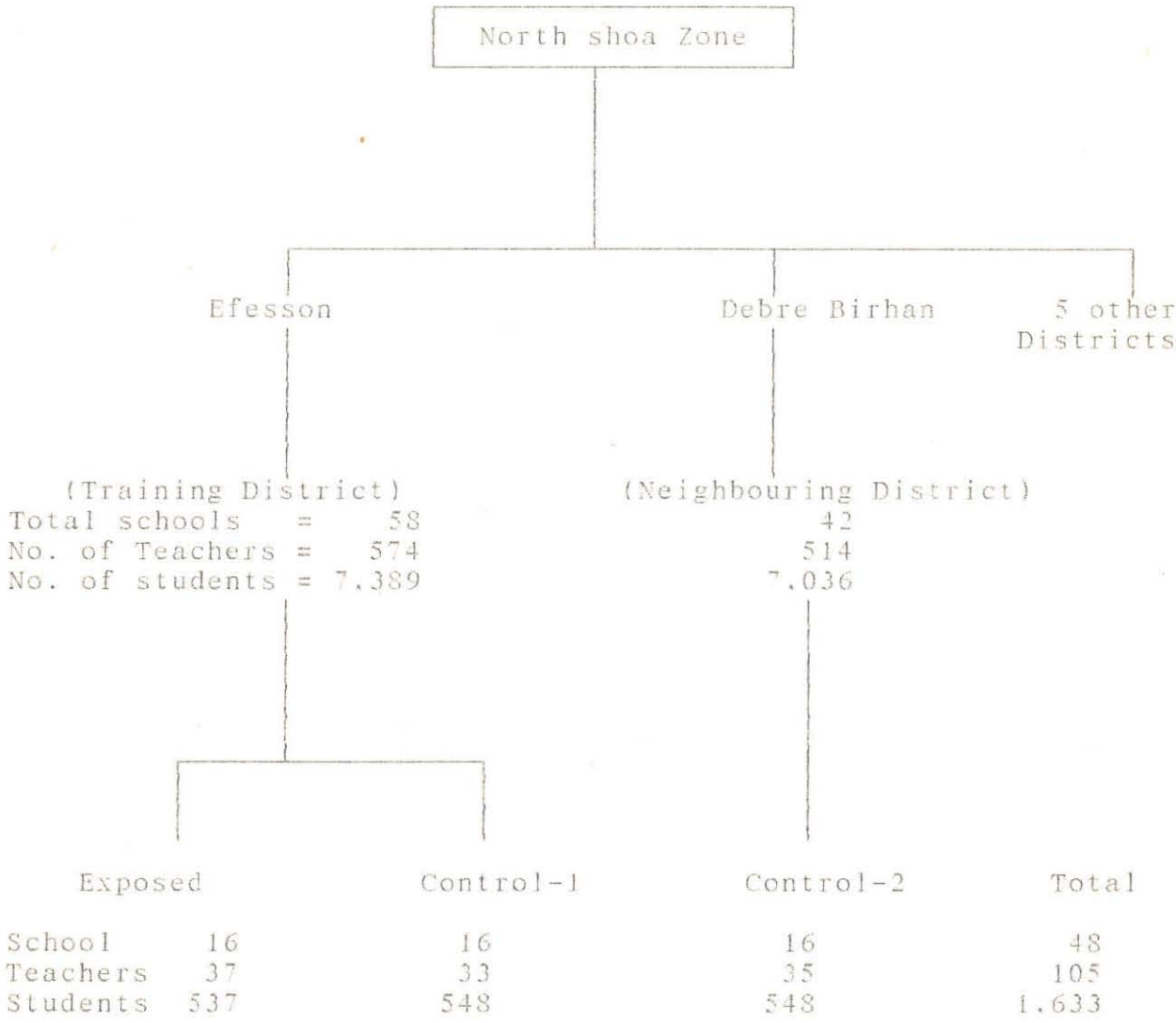
Data collection was carried out by two teams. each consisted of a sanitarian and a nurse. The team members were given theoretical training and had participated in the pre-testing process where they learned the procedures.

4.4. Sampling

According to North Shoa Zonal Administration Planning Office There are about 100 primary schools and 1.088 teachers with a student population of 14.425 (grade 2-6) in the zone.

A total of 48 schools. 105 teachers and 1.633 students were involved in the study. Sample size was not calculated since all the schools with trained teachers were included in the study. The schools in the exposed group were identified by the presence of teachers trained in health. The two comparison groups were selected through a multi-stage sampling procedure. The selection process is indicated below.

Figure 1. Selection of the Study Population



4.4. Variables Measured

The knowledge of both the teachers and the students as well as the students hygienic status and the environmental health conditions of the schools was assessed using pre tested questionnaire and formats. The procedures used are indicated below.

4.5.1. Exposure variable : Health Training of primary school teachers.

4.5.2. Outcome variables :

a. Knowledge of teachers and students on PHC topics was assessed using questionnaire . Responses were scored and the mean scores were then computed for analysis (scoring method is explained in Appendix 6).

b. Personal hygiene of the students specifically the cleanliness of their clothes, eye, teeth, body, fingernails, hair and the presence of hair lice were used to determine the hygienic status. There were two categories clean and unclean. A student was considered to be clean if there were no observable defects in hygiene and was given a score of 4 points.

c. The status of school environment i.e. availability of latrine, presence of students excreta in the school compound, cleanliness of the rooms, availability of waste disposal pits

and management of dry waste was assessed by scoring and computing the mean scores. (the scoring procedure was explained in Appendix 7). The same procedure used to measure the hygienic status of the students was applied.

d. School health education activities i.e. the presence of health education program. frequency of sessions. teaching methods and the use of teaching aids. inspection of students hygienic status and frequency of inspection was computed for comparison. (the scoring manual for health education activity and inspection of students hygienic status was given in Appendix 8)

The data was entered into the EPI-INFO of the computer program. Preliminary results and frequency tables were obtained using EPI-INFO program. Responses were given points and re-coded to obtain means. Mean variations between the comparison groups was obtained by ANOVA method. Analysis of the mean differences between the exposed vs. control-1 . exposed vs. control-2 and control-1 vs. control-2 groups was made using Bonferroni (Dunn) T test of the SAS program.

5. RESULTS

Teachers and students in the exposed and control groups were found to have similar socio-demographic characteristics (Table 1), except for years of service of the teachers, the means of which were 9.5, 7.5 and 11 years for the exposed, control-1 and control-2 groups, respectively.

Table 2 shows teachers' practice in school health education and related activities. 81%, 27% and 17% of the teachers in the exposed, control-1 and control-2 groups, respectively, were found to be involved in school health education. School health education was found to be inconsistent and irregular in all study groups, but it was observed to be slightly better in the exposed and control-1 groups.

In 71% of the respondents in the exposed group, shortage of time was reported to be the reason for not giving health education. On the contrary 67% and 86% of the respondents in control-1 and control-2 groups, respectively, have reported that lack of curriculum is the reason for not giving health education.

The majority of the teachers (53%) in the exposed group use more than one teaching method, but 75% of the teachers in control-1 and all the teachers in control-2 groups were using lecture and class notes as the only teaching method.

Table 1. Socio-Demographic Characteristics of Teachers and Students in the study. North Shoa. 1993

Variables	Exposed Gp	Control-1	Control-2	p
1.Teachers	(n=37)	(n=33)	(n=35)	
Mean age	29	27	32	0.5
Sex				
Male	32	25	26	0.2
Female	5	8	9	
Mean service Year	9.5	7.5	11	0.004
Marital status				
Single	15	14	10	0.5
Married	22	18	25	0.5
Separated	-	1	-	
2. Students	(n=537)	(n=548)	(n=548)	
Age (mean)	11.45	11.86	11.48	0.3
Sex				
Male	245	285	265	0.2
Female	292	263	283	

Table 2. Primary Schools Teachers Practices in School Health Education. North Shoa. 1993

Activity	Exposed Number (%)	Control 1 Number (%)	Control 2 Number (%)
1. Do you teach health education			
Yes	30 (81)	9 (27)	6 (17)
No	7 (19)	24 (73)	29 (83)
1.1. Frequency of teaching			
Once a week	12 (40)	4 (40)	-
Twice a month	1 (3)	-	2 (37)
Once a month	3 (10)	-	-
No fixed program/time	14 (47)	5 (50)	4 (67)
1.2. Reasons for not teaching			
Shortage of time	5 (71)	8 (33)	2 (7)
Not allowed by the school	-	-	-
Not included in the curriculum	2 (29)	16 (67)	25 (86)
I don't believe it is important	-	-	2 (7)
1.3. Teaching methods used			
Lecture and close notes	10 (33)	7 (75)	6 (100)
Drama	4 (12)	-	-
Songs	8 (28)	2 (25)	-
Demonstrations	8 (28)		-
1.4. Teaching aids used			
Posters and pictures	9 (31)	-	-
Chalk and board	8 (24)	3 (33)	3 (50)
Class notes	12 (45)	6 (67)	3 (50)
2. Do you inspect students hygienic status			
Yes	36 (97)	21 (64)	20 (57)
No	1 (3)	12 (36)	15 (43)
2.1. Frequency of inspection			
Daily	3 (8)	2 (10)	3 (18)
Twice a week	4 (11)	2 (10)	-
Once a week	29 (81)	17 (80)	17 (85)
2.2. Reasons for not inspecting			
Shortage of time	-	2 (15)	1(7)
Not included in the school regulation	1 (100)	10 (77)	12 (80)
Students do not accept	-	-	2 (13)
I don't believe it's important	-	-	-

Table 3. Teachers Practice Score and Mean Differences (95% CI) Between the exposed and Control Groups. North Shoa 1993

Comparison groups	Teaching health topics to the students	Inspection of students hygienic status
Exposed Group (n=37)	1.82	1.45
Control-1 (n=33)	1.43	1.36
Control-2 (n=35)	1.18	0.97
F-stat	10.00	13.01
p-value	<0.001	<0.001
Exposed vs. Control-1	0.39 (0.29, 0.77)*	0.09 (0.01, 0.03)*
Exposed vs. Control-2	0.06 (0.04, 0.87)*	0.48 (0.32, 1.02)*
Control-1 vs. Control-2	0.10 (-0.34, 0.74)	0.39 (-0.30,1.34)

* statistically significant : $p<0.05$

Teaching aid materials were used by about 65% of the trained teachers and by about half of the teachers in the control groups.

Inspection of students hygienic status was made by 95%, 64% and 75% of the teachers in the exposed, control-1 and control-2 groups, respectively. The majority of the teachers perform the inspection only once a week. The main reason given for not inspecting was that it was not included in the school regulation. Teaching health topics and inspection of students hygienic status (table 3) was also found to have higher mean score in the exposed group of teachers.

The total mean knowledge score of teachers as indicated on Table 4 showed variation (37.00, 35.00 and 34.03) and the differences are statistically significant (F-stat. 3.17, p:0.04).

Besides the total mean score, improvement in health knowledge was also observed on important diseases of public health concern and an approaches to increase health service coverage. Mean knowledge scores on specific health issues showed significant differences: between the exposed, control-1 and control-2 groups in causes of intestinal parasites (F-stat. 5.9 p:0.003): signs of dehydration (F-stat. 7.53, p:<0.001): treatment for watery diarrhoea (F-stat. 5.9, P:0.003): and on approaches to increase health service coverage to (F-stat. 6.47, p:0.002).

Table 5 shows the teachers' mean knowledge differences (95% CI) between exposed and control groups. There is no statistically significant difference in the total knowledge score among the comparison groups.

Table 4. Mean Score Knowledge of Teachers, North Shoa, 1993

Topics	Exposed (n=37)	Control-1 (n=33)	Control-2 (n=35)	F - stat	P-value
1. Total knowledge score *	37.00	35.00	34.03	3.47	0.04
2. Specific knowledge level on:					
2.1. Source of infection for intestinal parasites	2.15	2.14	1.62	5.90	0.003
2.2. Common child-hood disease	2.89	2.87	2.62	1.74	NS
2.3. How diarrhoea kills	3.32	3.24	3.22	0.10	NS
2.4. Treatment for watery diarrhoea	3.00	2.63	2.65	5.90	0.003
2.5. Mothers efforts to treat diarrhoea	3.67	3.39	3.08	2.15	NS
2.6. Signs of dehydration	5.00	4.66	4.00	7.53	<0.001
2.7. Disease prevented by face washing	4.11	4.00	4.02	1.19	NS
2.8. Signs and symptoms of trachoma	3.27	3.06	2.74	1.13	NS
2.9. Transmission of trachoma	1.62	1.45	1.37	2.39	NS
2.10. Diseases prevented by vaccination	1.62	1.51	1.35	2.88	NS
2.11. Priority in teaching food and nutrition	2.03	1.83	1.88	2.00	NS
2.12. Approach to increase health service coverage	1.86	1.66	1.48	6.47	0.002

* Maximum score possible was : 50

Table 5. Mean Difference Score of Teachers Knowledge On Health Issues (at 95% Confidence Interval) Between The Exposed and Control Groups. North Shoa. 1993

Topics	Exposed vs control-1 n = 37	Exposed vs Control-2 n = 33	Control-1 vs control-2 n = 35
1. Total knowledge score	0.19 (-1.71, 2.07)	2.97 (-0.09, 3.63)	0.97 (-0.33, 3.50)
2. Specific knowledge on:			
2.1. Case for intestinal parasites	0.01 (0.09, 0.30)*	0.52 (0.03, 0.96)*	0.52 (-0.43, 0.65)
2.2. Common childhood disease	0.02 (-0.20, 0.15)	0.27 (-0.98, 0.42)	0.25 (-0.14, 0.64)
2.3. How diarrhoea kills	0.09 (-0.47, 0.64)	0.09 (-045, 0.64)	0.01 (-055, 0.58)
2.4. Treatment for watery diarrhoea	0.37 (0.18, 0.71)*	0.35 (0.09, 0.95)*	-0.02 (-0.35, 0.36)
2.5. Mothers effort to treat diarrhoea	0.28 (-0.42, 0.98)	0.59 (-0.10, 1.28)	0.30 (-0.40, 1.02)
2.6. Signs of dehydration	0.34 (-0.31, 0.97)	1.00 (0.39, 1.63)*	0.66 (0.01, 1.32)*
2.7. Disease prevented by hand and face washing	0.11 (-0.16, 0.21)	-0.09 (-0.27, 0.09)	-0.02 (-0.30, 0.07)
2.8. Signs and symptoms of trachoma	0.11 (-0.66, 1.08)	0.53 (-0.33, 1.38)	0.32 (-056, 1.20)
2.9. Main transmission of trachoma	0.07 (-0.36, 0.21)	0.27 (-0.53, 0.03)	0.08 (-49, 0.11)
2.10. Diseases prevented by vaccination	0.11 (-0.44, 0.21)	0.27 (-0.55, -0.00)*	0.16 (-0.39, 0.17)
2.11. Priority in teaching nutrition	0.02 (-0.43, 0.04)	0.15 (-0.28, 0.19)	-0.05 (-0.10, 0.38)
2.12. Approach to increase health service coverage	0.02 (0.06, 0.45)*	0.38 (0.12, 0.63)*	0.38 (- .08, 0.44)

* Statistically significant: $p < 0.05$.

In examining the knowledge of teachers on specific health issues, significant mean differences were observed on the cause of intestinal parasites between the exposed and control-1 0.01; (0.09, 0.30); exposed vs. control-2 0.53; (0.09, 0.96); and no difference was observed between the two control groups.

Mean knowledge difference on treatment of diarrhoea was 0.37 (0.18, 0.71) for exposed vs. control-1, and 0.35 (0.09, 0.95) for exposed vs. control-2 groups. Similar mean knowledge difference on signs of dehydration were shown between exposed and control-2 1.00 (0.36, 1.63) and between the control groups 0.66 (0.01, 1.32).

Teachers knowledge on how to increase health service coverage to inaccessible populations showed a difference only between the exposed and control-2 groups 0.38 (0.12, 0.63).

In the actual teaching of health education mean scores of 1.82, 1.43 and 1.18 (F-stat 0.00, p:<0.001) were observed for the exposed , control-1 and control-2 groups, respectively showing differences between exposed vs. control-1 of 0.39 (0.29, 0.77) and exposed vs. control-2 of 0.64 (0.40, 0.87).

The frequency of health education sessions has also shown a mean of 2.51, 0.97 and 0.88 (F-stat 8.08, p:<0.001) for the exposed, control-1 and control-2 groups, respectively. Mean differences were observed between the exposed and control-1 groups 1.54 (0.41, 2.67) and exposed vs. control-2 groups 1.62 (0.51, 2.73).

Teaching health education in the classes should be related to the personal conditions of the students as measured by an

inspection of their personal hygiene. Institutionalization of inspection activity into the school system is not currently taking place in most of the schools. Mean scores of 1.45, 1.36 and 0.97 (F-stat 13.01, p:<0.001) were recorded for the exposed, control-1 and control-2 groups, respectively. The mean differences observed in the exposed vs. control-1 was 0.09 (0.01, 0.33) and in the exposed vs. control-2 it was 0.48 (0.32, 1.02).

The frequency of inspection was also found to be 2.78, 1.72 and 1.54 (F-stat 10.61, p:<0.001) for the exposed, control-1 and control-2 groups. The mean variation between exposed and control-1 was 1.05 (0.33, 1.77) and between exposed and control-2, it was 1.24 (1.24, 1.95).

The total mean score on teaching health education, inspection of students hygienic status and frequency of teaching and inspection was 12.73, 7.36 and 6.37 (F-stat 28.05 p:<o.001) for the exposed, control-1 and control-2 groups, respectively. The difference observed between exposed and control-1 was 5.36 (3.10, 7.62) and between exposed and. control-2, it was 6.35 (4.13, 8.58).

Table 6 shows the knowledge mean score of students. The total mean knowledge scores showed clear differences. They were 16.27, 15.20 and 15.00 for the exposed, control-1 and control-2 groups, respectively, showing significant result (F-stat. 6.87, P<001). Students mean knowledge score on specific health issues also showed statistically significant differences.

The student total mean knowledge difference (95% CI; Table 7) observed between exposed and control-1 was 1.07 (0.85, 1.25) and

between exposed and control-2, it was 1.27 (0.18, 1.47).

Students' knowledge on causes of intestinal parasites showed a mean score of 1.62, 1.41 and 1.40 for the exposed control-1 and control-2 groups. Significant mean difference were observed between the exposed and control-1 0.21 (0.03; 0.42) and between exposed and control-2 groups 0.22; (0.02, 0.41).

Knowledge of students on the mechanism through which diarrhoeal disease kills its victims had a mean score of 2.54, 2.14 and 2.09 (F-stat 27.25, $p<0.001$). Variations were observed between both exposed and control-1 (0.40; 0.24, 0.56) and exposed and control-2 groups (0.45; 0.28, 0.61).

Table 6. Mean Knowledge Score of Students, North Shoa, 1995

	Exposed (n = 537)	Control 1 (n = 548)	Control 2 (n = 549)	F - test	P-value
1. Total knowledge score *	18.27	15.20	15.00	6.87	<0.001
2. Specific knowledge level on:					
2.1. Prevention of eye infection	1.89	1.82	1.84	1.89	NS
2.2. Reduction of fly population	2.42	1.80	1.60	7.11	<0.001
2.3. How diarrhoea kills	2.54	2.14	2.09	27.26	<0.001
2.4. Diseases prevented by vaccination	4.04	3.44	3.02	19.02	<0.001
2.5. Prevention of skin disease	1.69	1.22	1.23	4.80	0.008
2.6. Value of consuming fruits and vegetables	1.69	1.44	1.36	6.05	0.002
2.7. Treatment for watery diarrhoea	1.50	1.48	1.41	5.01	0.006
2.8. Cause of intestinal parasites	1.62	1.41	1.40	9.50	<0.001

* Total possible score was : 25

Table 7 Mean Knowledge Difference of Students (and 95% CI) Between the Intervention and Control Groups, North Shoa, 1993

Topics	Exposed vs Control-1 (n = 537)	Exposed vs Control-2 (n = 548)	Control-1 vs Control-2 (n = 548)
1. Total knowledge score	-1.07 (-0.35, -0.06)*	-0.27 (0.97, -0.13)*	0.20 (-0.51, 0.27)
2. Specific knowledge level on:			
2.1. Prevention of eye infection	0.07 (-0.01, 0.14)	0.05 (-0.03, 0.13)	-0.02 (-0.10, 0.06)
2.2. Reduction of fly population	0.62 (0.13, 0.83)	0.62 (0.21, 1.04)*	0.20 (0.04, 0.21)*
2.3. How diarrhoea kills	0.40 (0.24, 0.56)*	0.45 (0.28, 0.61)*	0.04 (-0.11, 0.20)
2.4. Diseases prevented by vaccination	0.60 (0.24, 0.87)*	1.01 (0.47, 1.10)*	0.42 (0.08, 0.53)
2.5. Prevention of skin disease	0.47 (0.03, 0.51)	0.33 (0.02,0.63)*	-0.02 (-0.12, 0.01)
2.6. Value of consuming fruits & vegetables	0.25 (0.17, 0.52)*	0.33 (0.00, 0.53)*	0.08 (0.04, 0.10)
2.7. Treatment for watery diarrhoea	0.02 (0.00, 0.14)	0.09 (0.01, 0.16)*	0.07 (0.05, 0.09)
2.8. Causes of intestinal parasite	0.21 (0.03, 0.42)*	0.22 (0.02, 0.41)*	0.01 (0.05, 0.08)

* Statistically significant : P < 0.05

Table 8 shows the mean scores on hygienic status of students. The general mean hygienic scores were 16.69, 15.94 and 15.57 for the exposed, control-1 and control-2 groups respectively (F-stat. 41.61, P <0.001). Cleanliness of students clothes, face, teeth, body finger nails and hair all showed significant variations within the groups.

The total mean hygienic score (Table 9) between exposed and control-1 was (0.75; 0.75, 1.30) and exposed and control-2 it was (1.12; 0.63, 1.42).

Cleanliness of clothes of the students showed a significant difference between both the exposed vs control-1 (0.14; 0.13, 0.31) and the exposed vs. control-2 groups (0.04; 0.00, 0.17). Cleanliness of the eye showed significant difference between the exposed and control-1, exposed vs. control-2 and between the two control groups. Cleanliness of the teeth on the other hand showed difference only between the exposed and control-1 groups, 0.10 (0.02, 0.19). Cleanliness of fingernails of the students showed differences between the exposed and control-1 (0.13; 0.00, 0.25). Similar results were obtained on the cleanliness of the body of the students between the exposed and control-1 groups, (0.26; 0.17, 0.35) and between the exposed and control-2 groups, (0.34; 0.25, 0.43)

Clear differences were observed on the presence of hair lice between groups. Students in the exposed and control-1 groups have less hair lice compared to the control-2 groups.

Table 8. Mean Score on Hygienic Status of Students, North Shoa, 1993

Variables	Exposed (n = 537)	Control-1 (n = 548)	Control-2 (n = 543)	F-test	P-value
1. General hygienic status *	16.69	15.94	15.57	41.61	<0.001
2. Specific hygiene status on:					
2.1. Clothes of the student	2.64	2.50	2.42	17.63	<0.001
2.2. Face of the student	2.26	2.17	2.08	21.70	<0.001
2.3. Teeth of the student	2.26	2.33	2.23	4.79	0.008
2.4. Feet/body of the student	2.68	2.42	2.34	49.90	<0.001
2.5. Finger nails of the student	2.90	2.77	2.69	7.82	<0.001
2.6. Hair of the student	2.49	2.31	2.21	33.52	<0.001
2.7. Presence of hair lice	1.54	1.40	1.39	14.67	<0.001

* Total possible score was : 21

Table 9. Students Mean Hygienic Difference (95% CI) Between Intervention and Control Groups. North Shoa, 1993

Variables	Exposed vs Control-1 (n = 537)	Exposed vs Control - 2 (n=548)	Control - 1 vs Control - 2 (n=548)
1. General hygienic status	0.75 (0.75, 1.30)*	1.12 (0.93, 1.42)*	0.37 (0.36, 0.94)
2. Cleanliness/hygienic status on:			
2.1. Clothes of the student	0.14 (0.13, 0.31)*	0.04 (0.00, 0.17)*	0.08 (0.02, 0.17)
2.2. eye of the student	0.09 (0.05, 0.24)*	0.18 (0.01, 0.24)*	0.09 (0.03, 0.16)*
2.3. Teeth of the student	0.10 (0.02, 0.19)*	-0.02 (-0.11, 0.05)	0.07 (-0.00, 0.16)
2.4. Finger nails of the student	0.13 (0.00, 0.25)*	-0.20 (-0.20, -0.05)*	-0.07 (-0.33, 0.08)*
2.5. Hair of the student	0.18 (0.09, 0.26)	0.10 (0.01, 0.18)*	0.28 (0.19, 0.35)*
2.6. Presence of hair hair lice	-0.00 (-0.07, 0.06)	-0.14 (0.21, 0.06)*	0.13 (0.21, -0.06)*
2.7. body of the student	0.26 (0.17, 0.35)*	0.34 (0.25, 0.43)*	0.08 (-0.00, 0.16)

* Statistically significant P< 0.05

Out of the total of 45 schools included in the study only about a quarter have a water supply facility in their compound. 39(79%)of the schools have pit latrines in their compound of which only 29 (61%) could be used. The floors of the classrooms are cemented only in about half of the schools, which was found to be a problem in maintaining proper sanitation.

Table 10 shows the mean score on environmental health status of the primary schools. It was found from the study that schools in the exposed groups are better managed for open field defecation. There is also a marked difference in the cleanliness of the rooms, with mean scores of 3.31, 2.43, and 1.43 ($p:<0.001$) for the exposed, control-1 and control-2 groups, respectively. Availability of waste disposal pits and management of dry waste was also found to be better in the exposed schools.

Table 10. Mean Score on Environmental Health Status of Primary Schools, North Shoa, 1993

	Exposed (n=16)	Control - 1 (n=16)	Control - 2 (n=16)	F-stat	P-value
1. Total score on school environmental health status	15.24	10.62	12.25	4.34	<0.001
2. Mean score on environmental health components of schools					
2.1. Availability of latrines	1.12	1.37	1.12	2.07	NS
2.2. Students excreta seen around the school yard	1.81	1.18	1.37	8.59	<0.001
2.3. Cleanliness of the rooms	3.31	2.43	1.43	32.82	<0.001
2.4. Availability of waste disposal pits	1.68	1.12	1.50	6.43	<0.01
2.5. Management of dry waste	2.81	2.12	2.50	3.37	<0.001

Total possible score was : 20

RESULTS OF THE FOCUS GROUP DISCUSSIONS

Preparation of school teachers for health education should begin in the TTIs as a basic course. All the teachers realized that the preparation they had during their basic training was not adequate. Little time was given to Yenuro Zedey, through which a limited number of health topics were covered. The instructors of health topics themselves were also found to have had no basic health training, and they have no opportunities to attend seminars or refresher courses. Textbooks were not evenly distributed. No effort was undertaken to relate the classroom education to the real life situation of the students and their communities.

Almost all the teachers have stressed that lack of sanitary facilities like latrines and water supply and improper construction of the teaching rooms have a negative effect on the practical implementation of health education. They could all have been teaching models if they had been were properly organized.

After describing all these constraints the discussion groups recommended that:

1. A course in school health should be a required part of the teachers' training program with pre-service and in-service preparations to update the teachers on basic health matters and approaches to prevention of diseases. At least one teacher in each of the TTIs should receive special training in health education and be made responsible for co-ordinating health activities.

2. Political will is essential for health education to ensure high priority and provision of adequate resources. Multi-disciplinary groups should be formed to collaborate and work on the development of a prototype curriculum and Preparation of materials that would periodically be evaluated.
3. SHEPs require the collaboration of the MOE and MOH. There should be strong liaison between the two ministries and the community for effective management of school health education.
4. HEPs should be behavioural oriented and be reinforced repeatedly. The units should be taught in a spiral curriculum model in which the subject matter is reinforced each year.
5. SHEP should be as comprehensive as possible, with parental involvement as an integral part. Children' health habits originate at home and the involvement of the whole family is desirable.
6. Health clubs and task forces in which pupils could participate should be organized in schools through the establishment of demonstration centres in school compounds.
7. SHEPs should be integrated with inspection of student's hygiene status and an assessment of the school environment. Practical activities like cleaning classrooms, latrines, the compound and protecting water sources need to be promoted through a fixed scheduled and labour education program.
8. School principals should schedule extra classes and invite health workers and trained teachers to give health education on a regular basis.

6. DISCUSSION

The development of teachers' competence concerning health education could be obtained through several means, one of which is training. Training of primary school teachers as demonstrated in this study, has shown significant change in the basic knowledge of the teachers on health issues. Even though the variations between the comparison groups were not statistically significant. This might be due to the absence of follow-up in the form of refresher courses or seminars and reading materials that could help them to update their knowledge. Besides these, the training intervention by chance coincided with the major governmental, socio-political and structural changes which makes the application of skills difficult. The military movements during and after the training period, the change in government, and tribal conflicts have disrupted the school system. This is believed to have contributed negatively to the process and impact of the health education. But it is important to note that, despite all these constraints, the trained teachers have demonstrated better health knowledge compared to the control groups.

Along with the acquisition of knowledge, the training has increased the activity of teachers in school health education. Health education activity was carried out more frequently by the trained teachers than by the untrained ones. This might be an indication that the training has motivated teachers towards action.

Shortage of time and lack of curriculum which includes health education were the main reasons given for not including health education in school teaching. Although the primary school curricula seem to be congested, it is essential to include health education as part of the curriculum. This could be done either by rearranging the time table or by modifying the contents of some of the subjects to incorporate the basic health education.

Teachers in the exposed group have used different types of teaching methods and more than one teaching aid in teaching health education which brought better impact in changing the behaviour of the students.

The training helped the teachers develop the ability to educate others, conceptualize the principles which underline good and effective human relations and to develop a sense of responsibility to contribute, both by teaching and by example where they have shown to fully dedicate their time and energy.

The knowledge concerning control of flies was observed to be high in the exposed and control-1 groups, both of which share the same warm climate, compared to control-2. This could be explained by the large populations of flies in warm climates. So, it could reflect the priority area for exposed in that particular environment and shows that adequate emphasis was given to it during health education.

The training has also shown differences in scores on specific health knowledge and practices. Trained teachers' knowledge on causes of intestinal parasites, which was observed to be better than both control groups, might have contributed to the differences observed among the students. This was substantiated by improved use of latrines in the exposed schools, and especially by the observed absence of excreta in the school compound.

Hygienic status of the students is another area in which the impact of the training was reflected. Students attending the schools where the trained teachers taught were found to be cleaner, wore cleaner clothes and also had cleaner bodies, than the two comparison groups which might be due to the health education and the periodic inspection of students hygienic status at the schools.

Students in the exposed and control-1 groups who are mainly reside in the intermediate altitudinal zone had less hair lice compared to those in the control-2 group who live in a highland area. This is consistent with other studies (25) which showed the prevalence of lice infestation to be high in high altitude.

Limitations and Strengths of the study

Since this study was one of the first of its kind in Ethiopia, there were several limiting factors. Factors which could potentially bring change in health knowledge and behaviour were not examined in this study because of time constraints. The wide time gap between the actual training of the teachers and the initiation of this study. Lack of similar studies has also created a problem

in designing the methodology and made the comparison of the findings difficult.

The study is also believed to be valuable in many respects because: a) a wide representation was achieved by including so many schools in the study; b) the study has paved the way for further studies in the area of school health, in that it has developed and pretested a questionnaire which could be utilized by other researchers, so that comparisons could be possible in the future; and c) it will sensitize teachers and school authorities about the importance of school health programmes.

7. CONCLUSIONS AND RECOMMENDATIONS

Early adoption of positive health behaviour on personal hygiene and environmental sanitation is an important prerequisite for better health. For school children to learn and adopt such behaviours, it is important to provide proper education and facilities both at home and in school.

The presence of trained teachers has played an important role in changing the knowledge and behaviour of the students and in improving the school environment.

The training of the school teachers has prepared them for practical actions such as giving health education, inspection of students' personal hygiene and in improving the school environment, which have all strengthened the theoretical knowledge gained by the school community. Based on the findings of the study, the following recommendations were made to improve the school health:

1. Training of school teachers concerning health should be considered as a required part of teachers' training programs and then be followed by regularly conducted seminars and refresher courses.
2. The current curriculum of primary schools needs to be revised to address school health issues.
3. Government commitment is required to improve school environment, which includes water supply, latrines and waste disposal facilities.
4. Further studies are required to understand the situation in depth.

REFERENCE

1. WHO/UNESCO/UNICEF. Comprehensive School Health Education. Suggested Guideline for Action. Consultation on Strategies For Implementing Comprehensive School Health Education/promotion programs. Geneva, 25-29 November 1991 p 47
2. Dhillon,H.S., Philip,L. WHO-Health in Education For All; Enabling School Age Children and Adults For Healthy Living. p 17
3. MOE. Preliminary Educational Statistics. Educational Management Information System. MOE, September 1993. Addis Ababa P 4
4. Lloyd, J. International Policies for School Health Programs. HYGIE. International Journal of Health Education. Vol.VI.1987/3 p 8
5. Vynckt, S. Van der. Primary School Health Where are We and Where are We Going? Realities in the Life of School Children in the Third World. HYGIE; International Journal of Health Education; 1992, 11(3) p 45
6. Dhillan. et. al. South East Asia; International Consultative Meeting on School Health Education. A Call for Action to Implement and Strengthen Comprehensive Approach to School Health Education in South East Asia. HYGIE,International Journal of Health Education. March 93, Vol. VI/1 p 27
7. Desta,T. Assessment of the School Health Service in Addis Ababa During 1985/6 School Year. A Thesis Presented to the School of Graduate Studies of Addis Ababa University. 1986.p4

8. Belete, M. The Change in Health Related Behaviour of Primary School Pupils and Their Parents. ICDR, MOE, Addis Ababa, April 1993. p 5.

9. Minas, A. Primary School Teachers' Health Knowledge, Attitude,and Practice.(KAP). The Case of Illubabor. Curriculum Evaluation and Educational Research Division, Institute of Curriculum Development and Research . Addis Ababa, Ethiopia, May 1990 P2

10. Minas and Jung. Planning for Practical Health Education in Primary School in Baher Dar Awraja . Curriculum Evaluation and Educational Research Division . MOE. 19 p1

11. Belete, M. Evaluation of Implementation of Health Education Through New Yenuro Zedey Syllabus. Institute of Curriculum Development and Research. MOE, April 1991 p1.

12. Jame and Zandstra. Research in Health Education; Possibilities for the Health Science Division'. IDRC, Ottawa Feb. 1988 p22

13. Hiroshi Nakajima. Implementing Comprehensive School Health Education/Promotion Programs. Hygie, International Journal of Health Education. Vol. XI 1992/3 p 7

14. Bartlett, E.E. The contribution of School Health Education to Community Health Promotion: What Can We Reasonably Expect? 1991 p

15. Foege, W.H. Involving the Total Health System. HYGIE, International Journal of Health Education. Vol. VIII, 1989/1 p18

16. Sheila. School Health Education Programs in India. HYGIE, International Journal of Health Education. Vol.VI, 1987/p13

17. Editorial. Health Education for the School Age Children. Hygie, International Journal of Health Education. Vol. VI, 1998/4 p 3

18. Gumunder. Regional Conference on the International Union for Health Education, Singapore, July 17-20, 1990. Hygie, International Journal of Health Education. Vol. X, 1991/1 p 11

19. Hussen, A. A Comparative Study on the Preparation of Senior Secondary School Teachers in Ethiopia. Institute of Educational Research, The Ethiopian Journal of Education. July 1991, Addis Ababa University. vol. II No. 1, . p 5

20. Kolbe. L.J. International Policies for School Health Education Programs. Hygie, International Journal of Health Education. Vol.VI. 1987/3 Ireland. p 10

21. Krishnamurthy, P Samuel, M. School Health; Preparation of Teachers for Health Education. HYGIE, International Journal of Health Education. Vol. VI 1987/4 p19

22. Lethinen, J. How Does Educational Research Help Teachers? Institute of Educational Research. Addis Ababa University. Vol. 1 No. 2 July 1991 p 3

23. Editorial. Second European Conference on Health Education: A Unique Event, HYGIE. International Journal of Health Education. Vol. X. 1991/1 p2

24. Ling, J. CS. The Strategic Significance of Helping a Billion Children Learn About Health. HYGIE International Journal of Health Education. Vol.VI 1987/3 p23

25. Tesfa Micheal Tesfa-Yohannes. Prevalence of body lice in the elementry school students in three Ethiopian town. Ethiopian Medical Journal 1987; 27 (4) 207-208

26. WHO, Education For Health. Manual on Health Education in PHC, Geneva 1988, p 164

27. Morely. The Very Young as Agent of Change. World Health Forum, An International Journal of Health Development, Vol. 14. No. 1 1993 Geneva p 24.

APPENDIX I. Self-administered questionnaire for primary school teachers.

QUESTIONNAIRE FOR PRIMARY SCHOOL TEACHERS TO ASSESS THEIR KNOWLEDGE OF PRIMARY HEALTH CARE AND SCHOOL HEALTH EDUCATION ACTIVITIES

INTRODUCTION : The questions below are intended to assess the knowledge of primary school teachers and principals by comparing primary health care trained teachers and their students with untrained once. You are kindly requested to respond to the questions.The results of the study will be used for academic purposes and to demonstrate the possible impact of health training in promoting the health of school community so as to recommend health education in primary school curriculum . We will be very happy to make the results available if you are interested to know.

SCHOOL IDENTIFICATION..... SCHOOL No.....

1. Interviewees responsibility

1. school principal
2. school principal and teaching
3. teaching only

2. Personal identification

2.1 Age _____ years

2.2 Gender 1. male 2. female

2.3 Civil status 1. single 2. married 3. separated

2.4 Number of children_____

2.5 Educational status

1. 10 +2
2. 12 complete
3. 12 +1
4. 12 +2
5. others_____

3. For how long have you taught in a primary school? _____ years.

4. Have you attended the primary health care course conducted in Efesson?

1. yes 2. no

4.1 If your answer for question No. 4 is yes, after the training for how many years have you taught in the school where you are now teaching? _____years.

5. Do you teach health education to your students ?

1. yes 2. no

If your answer is no , move to question No. 5.4.

5.1 If your answer for question number 5 is yes, how frequently do you teach them?

1. once a week
2. once every two weeks
3. once a month
4. once every three months
5. there is no fixed schedule

5.2 In teaching health issues, what teaching methods are you using?

1. chalk and talk
2. drama
3. songs
4. demonstrations
5. all
6. others_____

5.3 For your health education sessions what teaching aids are you using?

1. posters / pictures
2. chalk and blackboard
3. class notes
4. all
5. others____

5.4 Reason/s for not teaching health education:

1. there is no allocated time
2. the school administration does not allow it
3. it is not included in the formal curriculum
4. I don't believe it is important for primary school students
5. there is no supervision and support by health workers
6. other reasons _____

6. Do you inspect the students with respect to their personal hygiene?

1. yes
2. no

6.1 If yes, how often do you do so?

1. every day
2. twice a week
3. once a week
4. twice a month
5. once a month
6. others.....

6.2 If not, why?

1. there is shortage of time
2. it is not part of school health system
3. I don't believe it is important
4. it is not accepted by the students
5. others.....

7. Do you have any working relationships with the health institutions around your school or home community?

1. yes 2. no

7.1 If yes, what are the relationships?

1.....

2.....

3.....

4.....

5.....

7.2 If no, why not?

1.....

2.....

3.....

4.....

5.....

8. Do you have any participation in community health development activity that involves students?

1. yes 2. no

8.1 If yes, please describe all your activity areas.

1.....

2.....

3.....

4.....

5.....

8.2 If no, why? (please explain the reasons)

1.....

2.....

3.....

4.....

5.....

NOW BEFORE WE CONCLUDE THIS TOPIC WE HAVE JUST A FEW QUESTIONS CONCERNING YOUR KNOWLEDGE OF BASIC HEALTH ISSUES

9. In your opinion what is the most important cause of parasitic infections among school children?

1. excreta
2. water
3. food
4. air
5. all of the above
6. others.....

10. What is the most common short term frequent disease among children under five years of age?

1. pneumonia
2. tuberculosis
3. diarrhoea
4. measles
5. others

11. Which of the following conditions will kill the child with diarrhoea?

1. the organism that causes diarrhoea
2. loss of body fluids and electrolytes
3. the pain and cramps
4. All of the above
5. others

12. Which of the following is the best treatment for watery diarrhoea ?

    1. Injections
    2. tablets
    3. replacement of fluid
    4. traditional medicine
    5. others

13. What can a mother whose child has watery diarrhoea do ?

    1. give more fluid and food
    2. giving more breast milk
    3. preparing and giving home-made solution
    4. giving atmit
    5. all are important

14 . What are the major signs of dehydration among children with diarrhoea ?

    1. weight loss
    2. reduction of skin elasticity
    3. sunken eyes
    4. general weakness
    5. all of the above

15. Which one of the following diseases can be prevented by face washing?

    1. malaria
    2. pneumonia
    3. diphtheria
    4. trachoma
    5. none of the above

16. How can trachoma be transmitted from the sick to the healthy one?

1.....

2.....

3.....

4.....

5.....

17. What are the main signs of trachoma?

1.....

2.....

3.....

4.....

5.....

18. Which of the following diseases can be prevented by vaccination?

1. measles and cancer
2. measles, skin diseases and diarrhoea
3. measles, tuberculosis, polio, tetanus, pertussis and whooping cough.
4. polio, eye disease, cancer and tuberculosis
5. all

19. What is the importance of consuming fruits and vegetables?

1.....

2.....

3.....

4.....

20. The distribution of health institutions in Ethiopia follows the main road with most of them situated in urban and semi-urban areas. Most of the population though lives in geographically inaccessible areas and cannot get any health service. In your opinion, how can these groups of the population get primary health services?

1. building more health stations and assigning health workers.
2. recruiting and training local people and constructing health posts.
3. organizing the distribution of drugs along with domestic commodities.
4. encouraging the use of holy water.
5. others.....

APPENDIX II. Interview and physical observation format for primary schools

INTERVIEW AND PHYSICAL OBSERVATIONS FOR ELEMENTARY SCHOOL STUDENTS

PART ONE - INTERVIEW

1. What measures can you take to prevent eye infection?
    1. using eye ointment
    2. washing hand and face on daily basis
    3. cutting the eye lid
    4. using local medicine
    5. others
2. In your opinion what is the best method to reduce fly population?
    1. spraying insecticide
    2. keeping the environment clean
    3. it cannot be reduced
    4. others
3. Which of the following conditions do you think will kill the child with diarrhoea?
    1. the organism that causes diarrhoea
    2. loss of body fluids
    3. the pain and crump
    4. all
    5. others.....

4. What are the diseases that can be prevented by vaccination?

1. measles
2. polio
3. tetanus
4. tuberculosis
5. diphtheria
6. whopping cough

5. What is the best treatment for watery diarrhoea?

1. injections
2. tablets
3. giving fluids
4. herbal medicine
5. all
6. others.....

6. What is the most common short-term disease among children?

.....

7. What is the importance of consuming fruits and vegetables?

1.....

2.....

3.....

4.....

5.....

8. What is the most important source of infection for intestinal parasites among school children?

1. excreta
2. water
3. food
4. air
5. all
6. others

PART TWO - PHYSICAL OBSERVATION

9. Clothing of the student

1. clean 2. not clean

10. Finger nails of the student

1. clean 2. not clean

11. Cleanliness of the face of the student?

1. clean 2. not clean

12. Status of the hair of the student

1. clean 2. not clean

13. Lice present in the hair

1. yes 2. no

14. Teeth of the student

1. clean 2. not clean

15. Cleanliness of the feet/body

1. clean 2. not clean

APPENDIX III. School environment assessment format

ASSESSMENT OF THE SCHOOL ENVIRONMENT

(to be filled in by interviewing the school principal and personal observation of the school environment)

1. Availability of water

1. available in the compound
2. available within 5 minutes walk
3. available within 10 minutes walk
4. available within 15 minutes walk
5. not available nearby.

1.1 the available source is from:

1. piped water
2. protected spring
3. protected well
4. unprotected well
5. unprotected spring
6. river

2. Are latrines available?

1. yes
2. no

2.1 If yes, No. of seats available? .....

2.2 does it have a superstructure?

1. yes
2. no

2.3 do squatting plates have covers?

1. yes
2. no

2.4 is student excreta seen around?

1. yes
2. no

3. Is there a program to clean the class rooms?

1. yes
2. no

3.1 If yes, frequency of room cleaning :

1. daily
2. twice a week
3. once a week
4. once every two weeks
5. once a month

4. Floor of the rooms

1. earth
2. concrete

5. cleanliness of the rooms

1. clean
2. not clean

4. Availability of waste disposal pits:

1. yes
2. no

7. The management of dry waste

1. buried/burned properly
3. not managed at all

APPENDIX IV. Topics for focus group discussions

TOPICS FOR GROUP DISCUSSIONS

(with trained teachers)

1. How can primary school teachers be prepared for health education?
2. How could primary school health education programs be implemented within the existing school system?

APPENDIX 5 - HEALTH TOPICS INCLUDED IN THE TRAINING OF PRIMARY SCHOOL TEACHERS

1. Concepts of a primary health care program
   - Essential elements of PHC
     - Personal hygiene and environmental sanitation
     - Maternal and Child Health including Family Planning and immunization program
   - Strategies to implement PHC
   - Involvement of teachers in implementing PHC
2. Health education and communication
   - Teaching methods used in school health education
   - Preparation and use of teaching aid materials
   - Assessment of students health knowledge
3. Common health problems, diseases and methods of treatment prevention and control
   - Malaria
   - Accidents
   - Malnutrition
   - Diarrhoea
   - Trachoma
   - Intestinal Parasites

Appendix 6. Teachers knowledge and practice score coding manual.

Ser No.	Area of assessment	Scores given for Correct resp.	Incorrect resp.
1.	Knowledge of teachers		
	1.1. Source of infection for intestinal parasites	3	0
	1.2. Common childhood diseases	3	0
	1.3. How diarrhoea kills	5	0
	1.4. Treatment for watery diarrhoea	4	0
	1.5. Mothers effects to treat diarrhoea	5	0
	1.6. Signs of dehydration	8	0
	1.7. Disease prevented by face washing	5	0
	1.8. Signs and symptoms of trachoma	4	0
	1.9. Transmission of trachoma	3	0
	1.10. Diseases prevented by vaccination	4	0
	1.11. Priority in teaching food and nutrition	3	0
	1.12. Approach to increase health service coverage	3	0
	Total maximum score 50		
2.	Teachers practice		
	1.2. Teaching health topics to students	3	0
	1.2. Inspection of students hygienic status	2	0

Appendix 7. Students Knowledge Coding Manual.

Ser No.	Area of assessment	Scores given for Correct responses	Incorrect responses
1.	Knowledge of students		
	1.1. Prevention of eye infection	3	0
	1.2. Reduction of fly population	3	0
	1.3. How diarrhoea kills	3	0
	1.4. Diseases prevented by vaccination	6	0
	1.5. Prevention of skin diseases	3	0
	1.6. Values of consuming fruits and vegetables	3	0
	1.7. Treatment for watery diarrhoea	2	0
	1.8. Cause for intestinal parasites	2	0
	Total score	50	

Appendix 8. School Environmental Health Assessment Score Coding Manual.

Ser No.	Area of Assessment	Maximum point for positive responses
1	Availability of latrine	3
2	Students excreta seen in the school compound	3
3	Cleanliness of the rooms	4
4	Availability of waste disposal pits	3
5	Management of day waste	4

DECLARATION

I, the undersigned, declare that this thesis is my work and that all sources of material used for this thesis have been duly acknowledged.

Name Ketemer Aschenaki

Signature

Place Addis Ababa

Date of submission 17, May 1994

This thesis has been submitted for examination with my approval as university advisor.

Dr. David Zakus

Advisor