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School Health Education



A Manual for Teachers

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A Manual for Teachers

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Preface

The Royal Government of Bhutan is committed to the development of human resources. Human resources development is basically linked to the spread and quality of the educational system and the improvement of health facilities. 'A healthy mind in a healthy body' implies the development of health as a pre-condition for the development of the mind. Right from the inception of development plans, the Royal Government has accorded priority to the promotion of education, health and nutrition. One of the important strategies, for all developing countries, is to lay adequate emphasis on preventive rather than curative measures to promote health for all. Since education has an important role in promoting the concepts of health and prevention of diseases, health education needs to be included in the educational curriculum, especially at the school stage. Direct dissemination of information, knowledge, skills and values that promote health and nutrition can effectively take place within the portals of educational institutions; for the information and knowledge gained and habits formed at an impressionable age have a lasting and snowballing cumulative effect.

It is precisely for this purpose that the Government has been emphasizing the need for developing appropriate and relevant curricula at all levels incorporating elements of basic cleanliness, health, nutrition and better food habits as well as the preparation of reading and instructional materials. The Government is equally keen that knowledge about health and nutrition should form an integral component of the teachers-training curriculum so that teachers get adequate training and knowledge about these aspects and pedagogical skills which help them in promoting the total personality development of the child.

We are grateful to the World Health Organization for making available the services of a Consultant, who has, after extensive study of relevant materials within the country and visits to educational institutions and discussions with knowledgeable persons, developed drafts of three texts: *Health for Growth*, Book One—for Class IV; *Health for Growth*, Book Two—for Class V, and *School Health Education-A Manual for Teachers*.

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The Department of Education hopes that the teaching of environmental sanitation, nutrition, suitable dietary habits and scientific methods of cooking to children as incorporated in these reading materials and with proper instructions from teachers, will make significant contribution to making them aware of basic principles of health and hygiene. The *Manual for Teachers* should provide useful instructional materials and will be handy both to parents and teachers.

As the saying goes, 'Well begun is half done'. This is the first attempt at developing the curricula and contents of courses in health education, elementary hygiene, better food habits, etc., and some inaccuracies may have crept into the texts. There may be need for further corrections, modifications and improvements. The Department of Education would appreciate suggestions from teachers, health authorities, developmental agencies, parents and others so that subsequent editions of the texts can be improved.

The Department of Education hopes that teachers will not only teach what is contained in the textual materials but also demonstrate, within and outside the classroom, the basic principles of health and hygiene. No amount of teaching and learning will suffice unless it is supplemented by actual practice, demonstrations, follow-up and occasional visits to families.

The Department of Education would like to take this opportunity of recording its appreciation to all national personnel such as teachers and heads of institutions, and the Department of Health Services for close collaboration and assistance in the development of these materials. Special gratitude is due to several international agencies, such as UNDP, UNESCO, UNICEF and WHO in particular for providing significant technical assistance. This is an excellent beginning in forging national and international collaboration for development of human resources. Such efforts need to be continued and intensified so that the objective of 'A healthy population' is realized sooner rather than later.

6 July 1983

Nado Rinchen
Director of Education

Introduction

The Royal Government of Bhutan has introduced two new textbooks—*Health for Growth* in Classes IV and V. These textbooks seek to inform and motivate students and to inculcate healthy practices, so that they can prevent disease and maintain health. This *Manual* for teachers is intended to provide teachers with additional material and to facilitate school health instruction in particular and education in general.

This *Manual* is in two parts. The first part deals with health, school health education, and principles of learning and teaching. The second part deals with school health instruction and is correlated with the *Health for Growth* textbooks for Classes IV and V.

Part I of the *Manual* is divided into four Chapters: Chapter 1 deals with health, the school health programme, and school health education; Chapter 2 describes how to organize school health education; Chapter 3 deals with the growth and development of primary school children; and Chapter 4 outlines the principles of learning and teaching.

Part II of this book is specifically correlated with the *Health for Growth* textbooks for Classes IV and V and provides material that will assist teachers in the classroom use of these textbooks. This part has six appendices. In Appendices I and II, a health education curriculum has been given; Appendix III contains indications of health and ill health; Appendix IV deals with First Aid; Appendix V provides notes on nutritional assessment and on the use of the weight-for-height charts; and Appendix VI discusses some common disorders.

It is hoped that this *Manual* will help teachers in health instruction and thus enhance the utility of the textbooks prepared for Classes IV and V.

Part I

CHAPTER I

Health, School Health Programme and School Health Education

This *Manual* is an aid for teachers who will use the two textbooks on *Health for Growth* in Classes IV and V. It must necessarily begin with the basic concepts of health, health education and organization of health instructions. This chapter is concerned with these basic concepts and issues.

WHAT IS HEALTH?

The World Health Organization describes health as 'a state of complete physical, mental and social well-being, not merely the absence of disease'.

In this definition, health means physical, mental and social health. Health is physical, because all the systems of which the body is made must work together properly. It is psychological, because health depends on emotions, and emotions have a powerful influence on behaviour. Health is sociological, because it can come only when the person and his environment (his family, the community in which he lives, his animals and the wildlife around him) interact together in a harmonious manner.

IS HEALTH AN OBJECTIVE OF EDUCATION?

Health education is an integral part of any programme of education. This is because it seeks to improve the quality of daily living. Health should be viewed not as an end in itself but as a means of enriching life. Health allows the child to attain the goal of education, and facilitates the development of all the people of Bhutan. Health encourages people to participate in community affairs, and to create a new society under the dynamic and enlightened leadership of His Majesty the King. Health is indeed one of the most important objectives of education.

WHAT IS A SCHOOL HEALTH PROGRAMME?

The school health programme includes all the activities in a school system that are carried out in the interests of the health of the child and the teacher.

The school health programme seeks to:

- protect children against communicable and other preventable diseases;
- discover physical defects and other abnormalities in the child and if they are remediable promote their correction;
- develop the knowledge and attitudes that will enable the individual to make intelligent decisions about health;
- promote desirable health habits;
- develop school, home and community cooperation in health promotion.

The school health programme has four closely related parts:

- a) The provision of a *safe and healthy environment* at school and the establishment of healthy interpersonal relationships.
- b) *School health services*, such as checking the health of pupils and staff, encouraging a quick correction of remediable conditions, the prevention and control of communicable disease, and the provision of emergency services for injury and sudden illness.
- c) *Health education*. The teaching of health as a separate subject or integrated with other subjects. Students learn through practical experience by participating in health programmes that are implemented in the community.
- d) *School-community relations* promote the health of children both within the school and the community.

WHAT IS SCHOOL HEALTH EDUCATION?

School health education refers to the instruction given on the subject of health by the teaching staff.

It provides and utilizes a variety of experiences for the purpose of improving knowledge, attitudes and practices relating to health.

It seeks to educate the child to realize the importance of health and to act intelligently to prevent disease and promote individual family and community health. The term adult health education or

community health education refers to education programmes that are organized in the community by the Government, and by various private agencies.

WHAT ARE THE AIMS OF HEALTH EDUCATION?

The broad purpose of health education is the inculcation of health practices, the development of desirable attitudes, and the development of scientific knowledge underlying such practices and attitudes.

Improvement of health practices

Inculcation of health practices is the most important aim of health education. Without this, health education has little value. Therefore, the inculcation of health practices is the teacher's primary objective in health instruction.

Development of desirable attitudes

A positive attitude towards health is important because attitudes generate specific behaviour. Practice and attitude are very closely related.

The child must appreciate health. He must realize that he can live and work better if he has healthy habits. He can grow properly, play games well, and think clearly if he is in good health. The development of a student's appreciation of health should be an essential objective of every teacher.

Making a practice of healthy habits

The acquisition of sound facts regarding health is the third aim of the instructor. Knowledge itself is not sufficient. Knowledge must be touched by emotion and reinforced by attitude. One should not be satisfied if pupils only know how to live in a healthy manner or give the right answers. The integration of fact into living practice is the most important aspect of health education.

CHAPTER 2

Organizing School Health Education

As has already been mentioned, school health education refers to the instruction provided at school that aims at improving the knowledge, attitudes and practices of students in relation to health. It has also been stressed that the inculcation of health practices is the most important aim of health education because without this the other components of health education have little value.

In school health education, the teacher plays a very significant role. He is the medium of health education and, at the same time, serves as a model for the students. Experiences that afford practical knowledge take place as a result of the interaction between the teacher and the students. Consequently the teacher must live up to these expectations. So the purpose of teaching is to help students to acquire, retain and use knowledge, to establish new habits and to develop good attitudes.

PRINCIPLES OF HEALTH EDUCATION

Teachers should bear the following principles in mind when imparting health education.

The ultimate objective of health education is the promotion of healthy living. As the health of the child is influenced primarily by what he does and not by what he knows, children should develop many health practices before they are old enough to understand why they are doing them. Gradually, supporting knowledge is built around this health behaviour.

The teacher should help his students to see that the rewards of health practices appear in growth, in improvement of skills and the ability to enjoy games.

Appropriate incentives for healthy living should be used at the respective age levels. The desire to grow is one such incentive at the primary school level. Reasonably consistent growth is evidence of health. Children want to grow. Their manner of living influences growth. Where regular weighing and measuring is possible, children should record

their growth and the desire to grow will become a reason for following a hygienic pattern of living. At other levels motivations depend upon the child's needs.

Health education is directed towards the health problems of the child. The teacher observes the child's habits, his understanding of health and safety, the misconceptions that he may possess, and the family attitudes that he may reflect. The teacher discovers the health needs of individual pupils:

- by knowing the individual child;
- by observing his behaviour;
- by questions and discussions;
- through conferences with his parents;
- through talks with health workers;
- through watching the growth of the child;
- through analysing scholastic attendance and health records; and
- through learning the child's interests, attitudes, and out-of-school activities.

The health practices of the teacher are important in influencing the health behaviour of the students. Consciously or unconsciously students imitate the people whom they admire. The teacher's personal habits of hygiene and cleanliness should reflect what he is teaching. The teacher himself should be in good health and be emotionally stable.

Health education should be positive and not negative. Emphasis is placed upon what to do rather than upon what not to do. Unhappy mental states are to be avoided. The child should receive recognition for his achievements in healthy living. His successes rather than his failures should be remarked upon.

Health instruction gains strength when it is related to the natural interests of pupils or students. The teacher knows not only the health needs and developmental status of his pupils, but also the interests that absorb the student's particular age groups; interests such as babies, pets, collecting things, cooking, dramatics, drawing and poster-making and games. Health instruction is related to such natural inclinations.

LEARNING EXPERIENCES

School health education incorporates a wide range of instructional experiences for students. Health teaching can be carried out as a

separate subject by a particular teacher or it can be integrated with other subjects. Every teacher should be concerned with the health education of the students and insist on the daily practice of healthy habits. The students will then perceive that health education is a very important objective of the school because it is of benefit to everyone.

Teachers can organize many teaching approaches, such as talking to the students, organizing discussion groups, or involving them in activities that will give them an insight into health education through practical experience. This is often more effective in bringing about a change in the health behaviour of the students.

CHAPTER 3

Growth and Development of Primary School Children

The whole fabric of education is based upon a knowledge of the growth and development of children. The school administrator, teachers and others who deal with education, work towards the attainment of optimum growth and development of the children.

In this chapter, the general pattern of physical, emotional, social and intellectual growth and development of primary school children is discussed briefly, so that teachers will be able to sharpen their observations and make decisions in relation to health education.

It is known that the development of children, physically, mentally and socially, occurs in a definite sequence. But the teacher must remember that in any particular age-group there is a wide variation in the rate of development. This applies particularly to the older age-groups.

PHYSICAL GROWTH AND DEVELOPMENT

The word 'growth' is used to indicate the actual increase in size of either a part of the body or of the whole organism, in terms of the multiplication of cells. The word 'development' is used to refer to the function of a part, and may be more difficult to measure. For example, 90 per cent of the growth of the brain is reached at the age of 6 or 7, but the brain does not reach the peak of its function until the age of 16 or 17. The rate of development of the brain is therefore much slower than the rate of its growth. The word 'development' also refers to emotional and social behaviour.

It is customary to think of growth only in terms of height and weight. Actually, these are only outward indications. The organs within the body also increase in size and develop their unique functions at their own speed. We will deal with height and weight as indices of growth and these outward manifestations will then be presumed to mirror inner maturation as well.

Many countries have done research on the growth and

development of children. This has not been done in Bhutan. Therefore in order to understand the growth and development of the children of Bhutan the results of research done in other countries will be discussed. The teacher should keep this in mind and make his own observations, so that his knowledge of the growth and development of children in Bhutan will be increased.

There are two periods of rapid growth in a child, one is before birth and up to the age of one year, and the other is at the beginning of puberty. The slowest rate of growth is between the ages of two and four, and between six and eight.

Boys are generally taller than girls between the ages of three months and ten years. Then there is a short period from 10 to 14, when girls exceed boys in height and weight. The growth of girls is accelerated from the age of 10 to 12 or 13; boys, in general, start two years later. The transition to adulthood is completed at about 18 years in the case of girls and in boys shortly thereafter.

Growth is a result of the response that the individual makes to his environment, using the hereditary equipment he is endowed with at the time of conception.

A child may differ from others of his age in his growth. This may be true of children within the same family. Therefore one child should never be compared with another in his age group in a way that will cause him embarrassment.

Every child can be stimulated to appreciate his progress from his own past record. An individual growth chart will help him see his progress each year.

PHYSICAL, EMOTIONAL, SOCIAL AND INTELLECTUAL CHARACTERISTICS OF PRIMARY SCHOOL CHILDREN

Pre-school up to Class III (age 5-10)

Physical

Growth relatively slow;
primary teeth erupt but permanent teeth appear to replace primary teeth, or milk teeth;
enjoys playing, running, jumping, climbing;
susceptible to respiratory diseases and other communicable diseases;
gains increasing control of his physical movements;
eyesight is normal;

Emotional

Self centred, wants to be first, desires attention;
sensitive to criticism or loss of prestige;
easily aroused emotionally (cries easily, gets angry quickly, etc.);
can take responsibility but needs adult supervision;
parent image is strong (is very proud of his parents);
identifies with his teacher (imitates his teacher);
expresses likes or dislikes readily.

Social

Lack of interest in personal appearance;
engages in imitative play;
frank but sometimes aggressive;
gradually becomes socially adjusted;
boys and girls play together but are aware of sex differences.

Intellectual

Interested in things that move, bright colours, dramatization;
collecting things, moving to rhythms;
interested in the present but not the future;
learns best through active participation in real situations;
wants to know 'why';
attention span is short.

Classes IV and V (age 10-14)

Physical

Girls begin to forge ahead of boys in height and weight at 10, and continue their rapid growth. They are taller and heavier than boys;
boys start growing rapidly at 13;
more concerned about physical appearance;
legs and arms grow fast;
muscle control improving;
bones are growing and are easily injured;
permanent teeth all present;
dental caries common, appetite good, increasing interest in food;
enjoy vigorous play,
tire easily (girls especially);

eyesight normal, but visual problems increase;
first menstruation for girls possible from age 12 onwards;
skin problems, voice changes.

Emotional

Seeks approval of peer group (his class mates);
desires to succeed, hero worship;
enthusiastic, noisy, imaginative, wishes to explore;
can be unstable, but is striving for independence;
increasingly anxious about family;
sex hostility.

Social

Learns to cooperate better;
group play, group decisions, loyal to group;
assumes responsibility for personal and group conduct;
interested in competitive activities and prestige;
begins to show leadership abilities;
develops interest in appearance;
strong sense of fair play, discriminates between right and wrong;
close friendships with members of the same sex;
separate play for boys and girls.

Intellectual

Eager to learn;
likes to talk and express ideas;
high potential for learning about science, adventure, the world;
eager to acquire skills;
wants precise assignments and meaningful experiences;
demands consistency;
generally reliable about following instructions;
attention increasing.

PHYSICAL, EMOTIONAL, SOCIAL AND INTELLECTUAL NEEDS OF PRIMARY SCHOOL CHILDREN

Pre-school up to Class III (age 5-10)

Physical

To develop muscle control through more skills to play;
to establish basic health habits;

to have plenty of rest and sleep;
to have health examinations that are carefully followed up;
to have dental attention, eye and ear checks;
to develop correct posture so as to prevent spinal deformities.

Emotional

To receive encouragement and recognition by the parent and support from other adults;
to express inner feelings;
to feel secure, wanted, accepted;
to be free from pressure;
to have guidance;
to develop self-confidence;
to develop realistic expectations of the self.

Social

To have satisfactory peer relationships, and group approval;
to learn the importance of sharing;
to learn to take some responsibility;
to work independently and in groups;
to develop an appreciation of social values such as honesty, sportsmanship, etc.

Intellectual

To experience frequent success, and learn to accept failure;
to have instructive experiences based on real life with direct involvement;
to have time to adjust to new experiences or situations;
to develop a love for learning;
to communicate effectively.

Classes IV and V (age 10-14)

Physical

To develop and improve coordination of both large and small muscles and understand developmental changes;
to have plenty of activities and games;
to have careful supervision of games;
to have sleep, rest and well-balanced meals;

- to have eye and ear checks;
- to have health examinations and follow-ups;
- to have dental attention;
- to develop correct posture.

Emotional

- To begin to have a realistic image of self, and appreciate what differentiates him from the others;
- to be recognized for his individual worth, and have self-assurance;
- to receive encouragement and affection, to be understood and appreciated;
- to exercise self-control and self-discipline;
- to have privacy, to be alone occasionally;
- to discuss problems, receive explanations, to have questions answered;
- to express emotion, grief, anger, likes and dislikes.

Social

- To be recognized and accepted by peer groups, receive social approval;
- to have relationships with adults that give a sense of security and acceptance;
- to have increased opportunities for independent actions and decisions;
- to learn to get along with others and accept those different from himself;
- to recognize the importance of leadership as well as being a follower.

Intellectual

- To experiment, explore, solve problems, use initiative, plan and evaluate;
- to receive individual help in areas which require skill without harmful pressure;
- to have opportunities for creative self-expression;
- to have rich opportunities to explore;
- to participate in concrete and real situations;
- to be able to accept oneself with one's strengths and weaknesses;
- to appreciate the value of work and the products of work.

IMPLICATIONS FOR TEACHERS

An understanding of the characteristics and needs of children will help teachers to select objectives and instructive experiences appropriate for students. Teachers should know the implications of developing these teaching strategies.

For example, at all class levels, the teachers should provide enough physical activities to allow students to develop better muscular control and coordination of movement.

At lower class levels, personal health habits should be stressed because little children are susceptible to disease. At this level, parents should be more involved in health education because the children have a strong image of the parents. But at the same time, the teacher should make himself a model for the students to develop healthy habits because the students also identify with the teacher. Since children cannot concentrate on one thing for a long time, the teacher should keep attracting their attention and repeating what has been said.

At upper class levels, students enjoy vigorous games. Precautions against accidents and some First Aid skills should be introduced at these stages. By then, students usually start taking an interest in their own physical appearance. This is the time for them to learn more about their body and health. Discussions on other topics, such as food, should relate to the student's interest in growing, in playing and in protecting himself.

The teachers may provide learning experiences for the students to gain approval, to explore and to exercise leadership. So the teacher should expose the students to various group activities. Students may work on different health projects to gain real experience in solving health problems at school. A student club can also be organized so that the students can exercise leadership and give guidance to those in the lower classes.

CHAPTER 4

Learning and Teaching

WHAT IS LEARNING

Learning is a process resulting in some change in behaviour that is relatively permanent. It includes the knowledge, attitudes and practices of the learner.

Learning is individual

Each student has a certain ability to learn. One student will learn faster than another. One student may get good marks in arithmetic, but bad marks in social studies. So the ability of different students to learn about health will also vary. Particular attention will need to be given to certain students and variation in the methods used will also help.

Motivation is the key

We have learnt that the child has different characteristics, needs and interests at different ages. If the students are not motivated to live healthily, for example by learning that vegetables will make them healthy, how can the teachers develop desirable health practices?

The teacher should show the relationship of health to the interests and goals of the particular students who are being taught. If the teacher can help the students to see that vegetables make a difference in their skill in games and in their appearance, the students' motivations for learning are already established and will facilitate the process.

Teachers must recognize that motivation towards healthy living is related to the characteristics, needs and interests of the students, which are different at each age level.

Involvement of the learner

Learning is a process within the learner. The involvement of the learner in the process of learning is very important, especially when acquiring a skill. The student should practise what the teacher has

demonstrated. For example, unless the student swims in water, the teacher cannot teach the student. The teacher cannot teach the student to swim by telling him how to move the hands and legs without making him practise in the water. The teacher should demonstrate how, and the student should have the opportunity to do it for himself and to explore the new skill.

Repetition

The small child has a short span of attention and memory. Learning can be facilitated by repetition. The teacher should not get impatient when he has to repeat the instruction especially when teaching students at the lower age levels.

Reinforcement

Reinforcing good health behaviour is very important to make learning permanent and an integrated habit. The student needs appreciation and reward for his good conduct. Appreciation given to him will also meet the needs of accomplishment.

HOW CAN THE TEACHER HELP THE STUDENTS LEARN?

Some people believe that the ability to teach is a natural gift that good teachers are born with. Other people believe that teaching is a science that is governed by a set of rules. But the rules themselves are not enough. They must be applied in helping students to learn a particular subject, taking into account numerous factors about the child, the subject, the teacher and the learning environment. The teacher has to think of ways of making his teaching more meaningful for his students.

Active learning

It is probably easiest for teachers to talk during the lessons, or ask the students to read a text in the class, taking turns. Instead, the teacher should think of activities that will encourage the student to use the information he has learned. Ask questions, suggest dramatization, set problems and organize a project.

Giving feedback

Give feedback as much as possible to students about their work. Good things should be praised but errors should be eliminated.

Performance should be measured.

Teaching should be meaningful

The teacher can help the students to learn by making sure that what he teaches has meaning for the students. This can be done by:

- explaining in advance what the students are expected to learn;
- relating this to his life;
- explaining new words and ideas;
- giving illustrative examples; and
- repeatedly pointing out that what is being taught will help the students to attain better health.

Individualize

Students have different rates and ways of learning, different interests, experiences and abilities. The teacher should try to find out what each student is like and then use this to vary his attention and teaching, so that as far as possible each student can learn at his own speed.

Clarify

The teacher should make sure that the student can hear what he says, read what is written, and understand the words used. Clear speech, large, clear handwriting, visual aids, and simple language are of the utmost importance.

Caring

If the students believe that the teacher cares about them, they will take special interest in learning.

Ensuring mastery

At the beginning of a lesson, the teacher should check whether or not all the students fully understand what has been taught before. At the end of the lesson, try to ascertain whether the main facts have been learned by all the students.

HOW TO IMPART KNOWLEDGE

The students can learn facts or gather information by listening to the teacher. The teacher is the source of information. He knows the facts and imparts them to the student.

But there are many other sources of information, such as textbooks, posters, parents, health workers, and other people the students come

into contact with. The world that students face in their daily life is also a source of information. So the teacher can use the students' own experience as a source of information. The teacher should encourage the students to learn from their own experience and from one another. The best way to impart knowledge is to use many sources of information and to get the students involved in the process of learning.

The teacher can do the following to disseminate knowledge:

- 1 Select and prepare appropriate facts or information for the students.
- 2 Hold the students' attention. You may explain why it is important, or ask the students why it is important.
- 3 Give a brief introduction to the information which will be presented.
- 4 You may test how much the students already know.
- 5 Present the facts and information. You may ask students to read a part of a book, use audio-visual aids, show models and posters.
- 6 Develop some activities that make students use the knowledge they have gained. Ask the students to demonstrate in front of the class. You may ask the students to draw pictures, make observations, write down the findings, and have a class exhibition.
- 7 Set tests to check whether the important points have been learned by the students.

The teacher should also increase his ability to speak in front of the class. Do you speak loudly enough, so that the ones at the back can hear? Do you speak clearly? The words you speak should be clearly pronounced. Do you use simple words that can be understood by all the students in the class? Do you sound as though you are interested in the facts or knowledge you are giving? A flat and monotonous voice quickly bores pupils.

The use of projects

In a project, students work in groups. Each group is asked to carry out a specific task. For example, students might be asked to find out the sanitation problems at their school or develop their skill at gardening by initiating school gardening projects.

The use of simulations

In simulation, the students use objects other than the real thing. The

students may use only the pictures of foods for playing 'market'. Playing market in the classroom will increase the students' understanding and skill at selecting balanced food for a day's meals. Several students can participate as sellers, and others as buyers. The sellers can keep the pictures of foods, and the buyers can use paper for money.

HOW TO TEACH AN ATTITUDE

An attitude is a tendency to behave in a certain way. The student who understands the importance of brushing his teeth after a meal may not be tempted to rush out to play games before doing this. The way a person behaves depends on his attitude.

Changing the attitude and health practices of the students is the most important part of health education at school. Can teachers really control attitude changes? One of the problems for teachers is that attitude cannot be measured in terms of units. Another problem is that attitudes are hard to define or to explain. Very few teachers would be willing or able to make a complete list of the attitudes they would like their students to have. Despite these problems, attitudes are very important and teachers must attempt to inculcate in the students the right attitude on health practices.

There are no guaranteed methods of teaching attitudes. The teacher must be aware that all the experiences that the student has, may change his attitude. Attitude change is developed by the individual, from his experiences in relation to others, his environment and himself.

There are some general methods that the teacher can use to teach new attitudes, but he must be aware that the students' attitudes may be shaped by events over which the teacher has no control. The students will read comics, talk with other children and meet their families. So the teacher only provides one influence amongst many. It is important therefore that the influence must be as strong as possible, and must be a good one.

Attitudes can be shaped by the following.

Providing background information. Information is not always enough to change an attitude, but it may help.

Providing a model or example. For many students, the teacher is a very powerful model. His students will often tend to copy the way he behaves.

Providing experiences. The teacher should provide as many direct experiences as possible. The students should grow vegetables in the school garden, clean schoolyards, make garbage pits, etc.

Encouraging discussions among the students. In the discussions, the students will share experiences, so that the experience one student has had may influence all the other members of the group. It is not what the teacher says that has the greatest effect. Therefore, the teacher should speak very little in these small group sessions. The level of discussion will be different according to the age and class levels.

Using role-playing exercises. Attitudes to people will often be improved if you understand the other person's point of view. The student should learn to be sensitive to the feelings of other people so that he does not indulge in practices like sneezing openly, or passing stool in the bushes.

In role-playing, the teacher gives the students some experience of what it is like to be a patient, or to be a mother with a malnourished child or have diarrhoea.

HOW TO TEACH SKILLS

Some healthy habits can be easily developed through listening to what should be done; others depend on a skill that needs example and practice. To wash the face needs some knowledge and skill. The student should know which parts of the face collect the most dirt, and understand why washing with soap is better. He should also be able to rub his skin properly, and decide whether it is clean enough or whether he should repeat the washing.

Teachers often use the following patterns when they teach a skill:

- describe the skill;
- demonstrate the skill;
- provide practice sessions.

Describe the skill. The first stage is to describe the skill. This will involve explaining why the skill is important, and why the students must learn it. It will involve explaining when the students should use the skill, and the stages or steps to be observed in applying the skill.

Demonstrate the skill. The demonstration must be correct.

The demonstration must be visible. All the students must be able to see what the teacher is doing. Teachers often make mistakes here. The problem is most serious when there are large numbers of students, or when the skill you are demonstrating cannot be seen from a distance.

Repeat the demonstration for the students who cannot see.

Explain what you are doing and emphasize the important points.

For example, 'Now we come to stage 2. You should wash your hands like this. Notice that the water must be clean and that I have to use soap. It is not enough just to get the hands wet. You must rub your hands together hard to remove dirt.'

Provide practice in applying skills. The most important step to be followed when teaching students how to apply a skill is to encourage them to practise it.

The main features of a good practical teaching session are:

All students practise the skill.

The students receive a feedback about how well they are applying the skill.

Educational methods such as asking the students to redemonstrate what the teacher has demonstrated, simulations, experiments and projects are very commonly used by teachers to help students feel confident about developing a skill.

Part II

CHAPTER I

Manual for Teachers Using the Health Textbooks

The *Health for Growth* textbooks have been prescribed for use in Classes IV and V. But it would be a great mistake if the teachers merely rely on the textbooks given to the students for they are only one of the many resources that can be utilized by teachers for school health education.

This chapter seeks to discuss the *Health for Growth* textbooks in outline and to place the documents that follow in their proper context.

HEALTH FOR GROWTH — CLASS IV

In the first part of *Health for Growth* for Class IV, the importance of health is discussed in relation to the interests of children at various age levels. In this way, it is hoped that the students will be motivated to learn about health.

The chapters on the organs answer the children's questions about their own body. The students are expected to perceive that their sense organs are windows to the world, through which they can learn many things about the world around them. So it makes the students willing to take care of their sense organs.

Along with this, personal health habits such as washing hands, brushing teeth, etc., are discussed. Personal health habits involve skills. So while teaching them, the teacher should demonstrate how to wash, brush teeth, etc.

The discussion on cleanliness is intended to develop habits such as keeping the house and school clean. The discussion on food properties stimulates the students to select the food that will best help them to grow, to work and to protect themselves from disease. The teacher should encourage the students to grow some vegetables in the school garden.

The section on 'play and health' helps the students to understand that play is related to their health. Some accidents that may happen while playing are also mentioned. This may motivate the students to

clean the playground as a part of the precautions for avoiding accidents.

The last topic of the textbook reiterates things that the students have learned and it introduces the concept of the 'Student Club'. The club helps the students to learn how to develop positive attitudes towards health and the ability to gain and maintain health.

At the end of each chapter in these textbooks, there are exercises that reinforce the information given in the preceding pages. The 'things to do' section is very important for the teacher to note. This is intended to help him in developing the skill and health practices of the students.

HEALTH FOR GROWTH — CLASS V

In the textbook for Class V, the concept of health is introduced in terms of physical, mental and social well-being.

The book discusses the systems of the body by describing the functions of the skeletal, muscular, digestive, respiratory, circulatory, excretory and nervous systems.

The concepts of germs, and transmission and control of communicable diseases have also been discussed. The intention is that personal health habits should be practised and cleanliness of the surroundings maintained.

Knowledge and some practical skills that help the students to develop a better understanding of their own life in the community are also introduced. These include the handling and preserving of food, keeping drinking water safe, the building of latrines and disposal of garbage. How one goes about making a simple rehydration mixture for diarrhoea and basic First Aid are also discussed. In the last few pages, the students are introduced to health services in Bhutan, so that they are aware of and are able to use the available services, such as immunization, care of pregnant mothers, medical care, nutrition and health education, when necessary.

Food and immunization charts are included in the textbook to facilitate the students' learning, and possibly that of parents as well.

Each chapter in the textbook is followed by exercises, which consist of questions to be answered and things to be done. Suggested activities are expected to promote further involvement of the students so that they will have some real experience in dealing with their health problems. Thus, the student's concern for health, positive attitudes

towards it, and the ability to deal with individual, family and community health will be developed.

As has already been mentioned, the teachers can develop other realistic instructional strategies based on specific health problems and needs, the interests of the students, and the available resources.

In this *Manual*, the growth and development of the students from pre-school up to Class V is discussed in Chapter 3 of Part I. The general characteristics and the needs of children are elaborated in the form of physical, emotional, social and intellectual changes.

In Chapter 4 of Part I, some principles of learning and methods for better teaching are discussed. Strategies for the teaching of knowledge, attitudes, practices and skills are enumerated. The teacher may be able to use these ideas in making decisions to develop an instructional strategy that is appropriate to the situation prevalent in the school.

The appendices in Part II of this *Manual* may help the teacher to obtain more information in organizing school health programmes. Appendices I and II contain a curriculum for health education for primary schools. The curriculum is divided into two parts. The first part is for pre-school children who study in classes up to Class III. The second part is for those in Classes IV and V. The curriculum includes general and specific objectives, which are arranged in terms of perceptions, attitudes and practices. The teacher should select specific objectives based on the health problems and needs of the students and, later on, develop appropriate learning experiences. Some experiences are provided for the convenience of teachers so that they can select and create other instructional activities based on the real health problems and needs of the students, and the resources available in the school.

The teacher should know more about health and health problems than the student and the community. He should have a broad understanding and be skilful when dealing with the health problems of students. To broaden the teacher's understanding of health problems, additional information on signs of health and ill-health, First Aid and some common disorders are given in Appendices III, IV and VI respectively. However, the teacher should not confine himself to health teaching. He should also hold himself responsible for developing other aspects of the school health programme.

The teacher should be able to distinguish between the sick and the healthy so that he can provide the former immediate help, such as First Aid and elementary treatment, or send him to the nearest health unit.

The Department of Education, in collaboration with the Department of Health of Bhutan, has developed and introduced the *Students' health and nutrition record*. The health and nutritional status of each child throughout his school career is recorded on these cards.

Many teachers have been trained to undertake this activity. Other teachers who have not been trained should help them to carry out the programmes. Appendix V provides teachers with information on how to make a nutritional assessment, the use of the weight-for-height charts and the completion of the consolidated half-yearly statement.

The teacher should also be able to establish a working relationship with health workers in the prevention and control of communicable diseases. He should be able to take necessary action if there is an outbreak of disease. Since the health of the students is closely related to the health of the community, community health education and school health can be integrated. The teacher can become a source of health information and can use his knowledge about the prevention of communicable diseases, for example, in developing educational activities for parents and community members. For their part, parents can reinforce and support health practices initiated by the teacher at the school.

It is hoped that this *Manual* and the Appendices that are placed in Part II will, together, facilitate better health learning, when it is used in conjunction with the two textbooks: *Health for Growth* for Classes IV and V.

Appendix I

HEALTH EDUCATION CURRICULUM PRE-SCHOOL UP TO CLASS III

GENERAL OBJECTIVES

After completing Class III, the student should be able

- 1 To understand that he needs to be healthy in order to play, attend school, make friends and to grow; and, therefore, to gradually adopt good health practices.
- 2 To understand that the healthy student should be clean and neat; to demonstrate personal hygiene and cleanliness at school and at home.
- 3 To understand that food while it serves as fuel for the body, helps the child to grow, play and remain healthy; to eat a variety of local food in order to have a balanced diet.
- 4 To understand that play, rest and sleep are important for health; to play outdoors and have enough rest and sleep.
- 5 To understand that injuries may cause poor health or death; to take safety precautions.
- 6 To understand that some animals and plants are dangerous, and to avoid them.
- 7 To understand that some diseases are communicable; to stay away from those who are ill, and to practise personal hygiene.

SPECIFIC OBJECTIVES AND SUGGESTED LEARNING EXPERIENCES

GENERAL OBJECTIVE No. 1

To understand that the student needs health to play, to attend school, to make friends, to grow and, therefore, to gradually adopt good health practices.

SPECIFIC OBJECTIVES

The student will be able to

- a) understand that when he is sick he cannot play or go to school

- b) perceive that when he is healthy he can play, meet his friends, go to school and also gain in height and weight;
- c) gradually adopt good health practices.

SUGGESTED INSTRUCTIVE EXPERIENCES

Using a picture, poster or some other visual aid show that: The sick student lies in bed. The sick student cannot play. The sick student cannot attend school.

Using a picture, poster or some other visual aid show: The healthy student plays in the playground and the healthy student attends school.

Tell a story which illustrates the importance of health to the students.

Ask the students to tell the class about their experiences when they are ill.

Encourage the students to ask questions.

Keep height and weight records throughout the year.

GENERAL OBJECTIVE No. 2

To understand that the healthy student should be clean and neat.

To demonstrate personal hygiene and cleanliness at school and at home.

SPECIFIC OBJECTIVES

In behaviour

The student should be able to always keep his face, ears, neck, hair, hands and feet, clothes, teeth and nails clean.

Demonstrate these skills:

Proper washing of hands, feet, face, hair, fruit and personal crockery.

Using a handkerchief when blowing the nose.

Cleaning the mouth and teeth by rinsing and brushing, using a toothbrush or stick.

Using the latrine properly (passing stool and urine).

The students should be able to practise personal hygienic habits, wash hands after using the latrine; wash hands before and after meals; wash fruit before eating it; wash or brush the teeth twice a day; wash feet before going to bed; wash the face twice a day; take

a bath at least once a week; change clothes if they are dirty or wet; use a personal clean towel; use a personal clean handkerchief; spit in the proper place (not in the classroom).

In attitude

The student should

- not like dirty things, bad odour, unpleasant taste and sight;
- not like a dirty face, dirty nose, dirty hands, dirty hair, dirty clothes, etc;
- not like to stay near or at a dirty place.

In understanding

The student should know that

- a nice and healthy student is clean and neat;
- dirt causes diseases;
- a dirty face may cause diseases of the face;
- uncut nails collect dirt;
- uncut and dirty nails cause stomach and skin diseases;
- dirt should be washed off properly and regularly.

SUGGESTED INSTRUCTIVE EXPERIENCES

The teachers and the students can organize the following:

- a) Show the contrast between dirty fruit and clean fruit and other dirty things and clean things (pictures can also be used).
- b) Show pictures of a dirty face, hands, etc. Then show pictures of a clean face, hands, etc. Ask the student to make a choice.
- c) Tell stories about a clean and neat student, stressing the value of cleanliness.
- d) Demonstrate how to wash properly: hands, feet, face, fruit, glass/cup, plate, handkerchief, etc.

Note: The steps of the demonstration are as follows

Commend the students who have shown cleanliness and ask whether they wash themselves.

Explain the importance of washing to clean away dirt.

Take the students out to the nearest source of water.

Students should stand around the teacher to watch the demonstration. Every student should be able to see.

Speak clearly and loudly.

Let one student redemonstrate, give your opinion on what he has done.

Understanding

The student should know that
play is good for exercising the body;
play is helpful in making friends;
outdoor games are good for the skin and body;
children play a lot;
rest and sleep are necessary to play better, to do school work and to
grow;
sleep makes us feel good;
children sleep more than adults;
children need large amounts of sleep and rest.

SUGGESTED INSTRUCTIVE EXPERIENCES

Show pictures of puppies, calves and piglets playing.
Show pictures of puppies, calves and piglets sleeping.
Talk about the children's need for play.
Talk about the children's need for sleep or rest.
Talk about the amount of time pets, baby sisters and brothers and
the students themselves sleep.
Talk about the activities in the afternoon and evening.
Collect names of different games the children can play.
Perform music, dance and drama shows.
Demonstrate different games the children can play.
Draw a clock face indicating a suitable bed time.

GENERAL OBJECTIVE No. 5

To understand that injuries may cause poor health or death. To
practise safety precautions.

SPECIFIC OBJECTIVES

In behaviour

The student should be able to
use knives, scissors and pins cautiously;
resist playing with sharp things such as knives, pins, blades and
scissors;
take the safest route to school;
play in the schoolyard or their own or a neighbour's yard rather
than in the street:

always use step-ladders and stairs cautiously and hold the railings;
wait at the side of the road;
cross the road after looking in both directions and if no vehicles are
approaching from either side;
clean up the playground at school, and home.

In understanding

The students should know that
injuries may cause bleeding;
bleeding causes weakness and possibly, death;
many things are dangerous and may cause injuries, such as
bleeding, burns, fractures, etc;
we should avoid playing with sharp things, fire, electricity;
we should avoid climbing on to very high places;
Bhutan has many sharp turnings on its roads.

In attitude

The students should
appreciate the importance of safety;
want to play safely.

SUGGESTED INSTRUCTIVE EXPERIENCES

Teachers and students can

- a) Talk about the importance of safety, and about accidents which
commonly happen to children.
- b) Talk about the danger of playing with sharp things, fire,
matches, electricity, and make a list of things which are
dangerous.
- c) Observe a demonstration which teaches the correct use of
knives, scissors, blades, pins, matches, etc.
- d) Make lists of several precautions which should be taken at
home, in the playground, at school, and on the way to school.
- e) Report and dramatize accidents, injuries, burns, etc., in the
village.

GENERAL OBJECTIVE No. 6

To understand that some animals and plants are dangerous. To avoid
these.

SPECIFIC OBJECTIVES

In behaviour

The students should refrain from playing around bushes, heaps of stones and logs; eating wild fruits, which they have never tasted before; eating spoiled fruit and rotten food.

The student should be able to identify dangerous animals and plants.

In understanding

The students will be expected to know that many plants and animals are useful to man; many plants and animals are dangerous to man; some dangerous plants and animals are found around the playground, and in our other surroundings; they should avoid the plants and animals which are dangerous.

In attitude

The students should avoid dangerous plants and animals; appreciate safety precautions.

SUGGESTED INSTRUCTIVE EXPERIENCES

- a) Discuss the plants and animals that are useful and those that are dangerous to human beings, show pictures of them.
Make a list of dangerous plants and animals which are found in our surroundings.
- c) Draw several dangerous animals.
- d) Tell stories about the dangerous animals.
- e) Dramatize the sounds and actions of lions, tigers, cobra snakes and other dangerous animals when they are about to attack other animals or people.

GENERAL OBJECTIVE No. 7

To understand that some diseases are transmitted by other people.
To stay away from those who are ill and to practise personal hygiene.

SPECIFIC OBJECTIVES

In behaviour

The students will be expected to stay away from sick friends who may pass on diseases; carry a clean handkerchief; cover the mouth when coughing or sneezing; wash their hands after using the latrine and before eating; use their own towel, handkerchief and toothbrush; refrain from spitting indiscriminately; keep their hands out of their eyes and mouth; report to parents or teachers when feeling unwell; stay at home when not well; wear warm clothes in cold weather; change clothes if they are wet; refrain from drinking stream water or river water; drink boiled water; go to the dispensary, BHU or hospital when sick.

In understanding

The student should know that some diseases are passed on from one person to another; when we cough or sneeze, we may spread disease; children easily catch these diseases; we can avoid them by practising personal hygienic habits; we should tell parents or teachers when we feel unwell and to go to the nearest dispensary, BHU or hospital for medical treatment.

In attitude

The students should show a willingness to get medical treatment when sick; an appreciation of cleanliness and personal hygienic habits.

SUGGESTED INSTRUCTIVE EXPERIENCES

- a) Talk about worms, which most of the students will probably have seen in their stools, and about how the eggs stick under their nails, and get into their stomach.
- b) Talk about tiny harmful organisms and look at the tiny particles in the air in a beam of sunlight.

- c) Observe how to cover the mouth and nose while coughing and sneezing.
 - d) Observe demonstrations of washing the face and hands.
 - e) Visit a latrine and observe a demonstration about how to use the latrine, and practise it.
 - f) Draw a picture of a friend who is ill in bed.
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Appendix II

HEALTH EDUCATION CURRICULUM CLASS IV AND CLASS V

GENERAL OBJECTIVES

After the completion of studies in Class V the student should be able to understand

- 1 The importance of health for himself and to keep well through practising healthy habits.
- 2 The general features and growth of his body, and to take care of it through practising personal hygiene and cleanliness, exercise, rest and eating good food.
- 3 The properties of different foods and to select, handle and preserve food correctly.
- 4 The nature of accidents, and to provide protection and help for himself and others against accidental injury.
- 5 The nature of communicable diseases and to practise personal hygiene, general cleanliness and the use of medical facilities for treatment and immunization.

SPECIFIC OBJECTIVES AND SUGGESTED LEARNING EXPERIENCES

GENERAL OBJECTIVE NO. 1

To understand the importance of health for himself and to keep well through practising healthy habits.

SPECIFIC OBJECTIVES

In behaviour

To practise personal hygiene and cleanliness in his daily life.

In attitude

The student should like to keep well; grow up, play, study and work.

In understanding

The student should know that

- a) Good health is important for steady growth, to play games skilfully, to study easily and to work.
- b) He needs good health for future work as a farmer, government officer, teacher, driver, trader, etc.
- c) Good health depends on his personal health habits.

SUGGESTED LEARNING EXPERIENCES

- 1 Talk about the students' experiences when they get sick.
- 2 Talk about the students' experiences when they are healthy.
- 3 Talk about the importance of health for steady growth, playing games, studying, work and their future life.
- 4 The *Health for Growth* textbook should be read frequently.
- 5 Measure height and weight regularly and keep records.
- 6 Talk about personal health habits in relation to good health.

GENERAL OBJECTIVE NO. 2

To understand the general features and growth of his body, and to take care of it through practising personal hygiene and cleanliness, exercise, rest and eating good food.

In behaviour

The student should be able to care for his *eyes*.

- He should wash his eyes with clean water;
- keep dirty hands and sharp objects away from his eyes;
- hold a book at the correct distance while reading;
- place books on the table to get enough light.
- refrain from throwing dust into other people's eyes.

The student should be able to care for his *ears*.

- He should wash the dirt out of his ears with clean water;
- avoid cleaning his ear holes with sharp instruments;
- avoid shouting into people's ears;
- blow his nose gently, keeping both nostrils open;
- go to a health unit if he is suffering ear pain.

The student should be able to care for his *nose*.

- He should wash his nose regularly;
- blow his nose properly;
- keep sharp things away from his nose;
- go to bed, if he gets a cold.

The student should be able to care for his *mouth and teeth*, by brushing his teeth properly.

The student should be able to care for all parts of his *face*. Wash his face regularly with clean water; use his own towel.

The student should practise personal hygiene and cleanliness such as covering his mouth and nose while coughing and sneezing; using a clean handkerchief; staying home if he is not well; cutting and cleaning his nails; washing hands before and after eating; washing fruit before eating; wearing clean clothes; washing his feet before going to bed; using clean shoes and socks; using a latrine to pass stool; cleaning bed, cot quilt, etc., regularly.

The student should enjoy taking exercise, such as playing many children's games; playing out of doors.

The student should have good sleeping habits such as taking enough sleep every day, at least between 8 to 10 hours sleeping in a proper position.

The student should have good eating habits. He should eat a variety of food; measure his height and weight regularly; take care of all the parts of his body.

In understanding

The student should know that our body grows in size.

Some children grow faster than others.

The rate of growth is different at different ages.

Our sense organs are our windows to the world.

Inside our body we have many other organs.

The organs work as a team and each carries out a special kind of function.

These teams are called systems, and these systems are the skeletal system, the digestive system, the breathing system, the muscular system, the circulatory system, the respiratory system, the

excretory system and the digestive system.
Disease damages our body cells and hampers our growth.
We should take care of our sense organs and other parts of our body.
We should wash the body regularly to rid it of germs.
We should practise personal hygiene in order to prevent disease.
We should exercise through playing.
Playing outdoors in the fresh air is good for us.
We need rest and sleep to let the body grow properly.
We need enough of the right kind of food to grow.
We must also drink sufficient quantities of water.

In attitude

The student should
want to have a good body;
want to grow properly;
appreciate his own rate of growth;
want to practise personal hygiene, exercise, rest and enjoy eating good food.

SUGGESTED INSTRUCTIVE EXPERIENCES

Demonstrate the work of the sense organs, nerves and brain.
Role playing about blind, dumb and deaf people.
Talk about other organs, using pictures or models.
Demonstrate how to wash the face, hands and feet properly.
Make drawings of sense organs and other organs.
Demonstrate how to sit properly, while reading or writing.
Rearrange the desks in the class to get proper lighting.
Demonstrate how to use a clean cloth to clean the ears and to remove dust from the eyes.
Write a story 'If I did not have eyes, etc.'
Make a list of the games the children like to play.
A time of rest or relaxation for five minutes, keeping the eyes closed while sitting still.
Record the length of time that each student spends in a day awake, playing, studying, sleeping, etc. Talk about this with friends.
Bring different fruit, vegetables and foods to school.
Taste different kind of fruit, vegetables and other foods.
Organize competitions between groups of students, based on the practice of daily personal hygiene.

GENERAL OBJECTIVE No. 3

To understand the properties of different foods and to select, handle and preserve food correctly.

SPECIFIC OBJECTIVES

In behaviour

The student should be able to
eat many kinds of food;
eat enough of the food offered to him by his parents;
correctly select the body-building, the energy-giving, and protective foods which will result in a balanced diet for one meal.
He should also be able to indicate the food required by a breast-feeding mother, the food for a pregnant woman, the food for a hard-working father;
wash fruit and vegetables before eating them raw;
wash his hands before eating;
explain how to cook vegetable curry correctly;
enumerate several hygienic ways of doing the kitchen work;
select some good ways to preserve food for the family;
grow vegetables in his kitchen garden or school garden.

In understanding

The student should know that
all living things need food to grow and to live.
We eat different parts of plants, such as roots, stems, seeds, flowers, fruit and leaves.
We eat the flesh, milk and eggs of animals.
Various types of food contain different properties.
The body-building foods are needed to help growth and to replace the worn-out body cells.
The energy-giving foods are needed to provide energy.
The protective foods are needed to protect him from disease and keep him in good health.
He should eat a balanced diet daily.
The amount of food we eat depends on our age, occupation, sex, state of health and climate.
If his body does not get enough of the right kind of food it will show signs of deficiency and disease.

We should grow a variety of vegetables in our kitchen garden or school garden.

Proper preparation and cooking is essential to preserve the necessary properties of the foods which we eat.

Food can be infected by germs if it is not handled properly.

There are hygienic ways of doing kitchen work which should be practised regularly.

We should avoid wasting food.

Food can be preserved in many ways.

Food should be stored under hygienic conditions.

In attitude

The student should

enjoy eating a variety of food;

want to eat a balanced diet daily;

appreciate the work of farmers;

grow a variety of vegetables in the school and kitchen garden.

SUGGESTED INSTRUCTIVE EXPERIENCES

Talk about animals and their food.

Talk about the variety of food human beings need.

Make a list of the foods available in the village.

Sing songs about food.

Draw pictures of different foods.

Collect pictures of food from magazines and newspapers.

Make models of food using clay or paper.

Simulate a class store of food using pictures or models.

Select foods for a day's meal, for a pregnant mother, for a breast-feeding mother, for a hard-working father and for winter.

Keep height and weight records.

Demonstrate the proper way in which to brush teeth.

Talk about handling and preserving food.

Visit a market.

Read the *Health for Growth* textbook.

GENERAL OBJECTIVE No. 4

To understand the nature of accidents, and to provide protection and help himself and others against accidental injury.

SPECIFIC OBJECTIVES

In behaviour

The students should be able to clean the playground and remove harmful things before starting to play.

Cover ditches or holes and level the playground.

Walk carefully on sloping footpaths and cut steps in the footpath.

Follow the rules while playing games.

Hold the railing while climbing stairs or ladders.

Refrain from rushing while climbing ladders or stairs.

Girls should hold up their kiras while climbing ladders.

Be careful so as not to slip on the floor of the bathroom and washing place, while bathing.

Clean the floor of the bathroom and washing places regularly.

Look out for vehicles passing by, before crossing the road.

Be careful when walking around corners and sharp turnings.

Refrain from walking along the edge of rocks on a hill.

Keep away from playing with plugs and wires.

Refrain from touching water while it is being heated with an immersion heater.

Refrain from putting sharp instruments into a plug.

Make sure that lamps and kerosene stoves are filled before lighting them.

Keep away from harmful animals and plants.

Refrain from any action which may cause accidents to himself or others.

Provide First Aid to himself, and to others who get minor injuries from accidents such as bleeding, abrasions, sprains, burns, nose bleeding, poisoning from snake bites and dog bites, before sending them to a health unit.

In understanding

The student should know that

accidents are usually caused by carelessness.

Accidents can often be prevented.

On a playground there are sharp things, thorny plants, ditches and holes which may cause accidents.

He should be more careful while playing and even walking if his school is built on a hill.

A ladder which is made of a single piece of wood, has a very small space to step on, and he should be very careful while climbing it. Girls may easily slip and fall while climbing, because they may step on the edge of their kira.

The surface of the floor of the bathroom or washing place is very slippery and regular cleaning is necessary.

He should not get panicky when providing First Aid.

If a person's clothes or hair are on fire, he should first try to put out the flames.

Snake poison spreads very fast in the body and is carried by the blood. He should tie a piece of cloth just above the bitten part to prevent the poison in the blood reaching the heart.

If he should get bitten by a dog, he should catch the dog and watch him for 10 days, in case it suffers from rabies.

In attitude

The student should
appreciate the rules of games;
be aware of the precautionary signs on the road;
want to learn the skill of First Aid;
like to help others who have accidents.

SUGGESTED INSTRUCTIVE EXPERIENCES

Talk about recent accidents in the villages.
Demonstrate what should be done if an accident occurs.
Talk about playing games and the possible accidents which a particular game can cause.
Make a list of the rules for children's games.
Talk about precautions while playing.
Talk about possible accidents at the school and home.
Talk about harmful animals and plants around the school and home.
Draw some harmful animals and plants.
Talk about precautions to be observed at the school and home.
Demonstrate several types of First Aid for minor injuries.
Read the *Health for Growth* textbook.
Enact a play on accidents.
Keep the school clean and repair ladders, stairs and footpaths.

GENERAL OBJECTIVE No. 5

To understand the nature of communicable diseases, to practise personal hygiene, and general cleanliness and to use health facilities for treatment and immunization.

SPECIFIC OBJECTIVES

In behaviour

The student should be able to
clean his face at least twice a day.
Wash his hands and feet properly.
Take a bath at least once a week.
Use soap for bathing and other washing.
Wash his hands before and after eating.
Wash his hands after using the latrine.
Cut his nails and keep them clean.
Carry a clean handkerchief or other cleaning cloth.
Use his own handkerchief to dry his face, especially his nose, mouth and eyes.
Cover his mouth and nose while coughing and sneezing.
Use his own clean clothes.
Use his own clean towel.
Change into his own clean clothes.
Change his clothes if they are dirty or wet.
Wash his clothes, towel, and handkerchief with soap.
Brush his teeth at least twice a day, in the morning and before going to bed.
Use his own toothbrush.
Refrain from spitting everywhere.
Refrain from throwing mucus on to the wall or floor.
Refrain from using his clothes to wipe mucus thrown out by his younger brother or sister.
Blow his nose gently with both nostrils open.
Wash fruit and vegetables before eating them raw.
Wash his blankets and sheets, etc., regularly.
Refrain from buying uncovered food from a street seller.
Wash his hands after playing.
Keep his hands out of his eyes and mouth.
Wash his shoes or slippers regularly.

Use clean shoes.

Change his socks regularly.

Use a latrine properly for passing stool and urinating.

To keep his surroundings clean the student should be able to

- clean the school and home regularly;
- make a proper garbage pit at school and at home;
- dump rubbish only in the garbage pit;
- provide proper drainage for water;
- use a proper latrine at school and home;
- keep cattle sheds, pig sties and hen coops away from the house;
- dump animal waste in garbage pits regularly;
- store food properly;
- keep food covered;
- handle cooking utensils properly;
- clean the beds, hostel, school kitchen and dining room regularly.

The student should

practise general health habits such as staying in bed when he has a cold;

- go to the nearest health unit for treatment;
- keep away from friends who suffer from communicable diseases;
- use the latrine properly;
- use clean water sources for drinking, washing and bathing;
- refrain from using stream or river water to drink;
- boil water before drinking;
- cook food properly before eating;
- wash raw food with clean water before eating it.

The student should understand

there are useful plants and animals.

There are dangerous plants and animals.

There are tiny plants and animals which we can hardly see.

The minute living organisms, which are called microbes, can only be seen with the help of a microscope.

Germs damage our body cells.

Germs grow and multiply in dirty, warm, moist and dark places.

Germs get into our bodies through our mouth, nose, eyes, ears and skin with the air we breathe, the food we eat and the water we drink.

Some diseases are transmitted from one person to another.

We should keep away from persons who are suffering from communicable diseases.

Some diseases such as the common cold, measles, mumps, scabies, tuberculosis, diarrhoea are transmitted by direct contact.

A student with scabies should sleep apart from healthy students. Flies, cockroaches and other crawling insects carry germs on their hairy legs and on to our food and utensils.

Some diseases such as tapeworm and malaria are transmitted indirectly, and the germs of these diseases have to develop into a certain stage in the body of the pig and anopheles mosquito before they can infect man.

Dust also carries germs.

We should clean our surroundings so that filthy insects and germs cannot grow and develop in our area.

We should make garbage pits properly.

We should make proper latrines.

We should cook food properly.

We should wash our hands before eating.

We should go to a dispensary, BHU or hospital for treatment when we are sick.

Some diseases can be avoided by making our body immune through vaccination.

We can get immunization at a BHU or a hospital, which also provides other health services such as treatment, the examination of pregnant women, health education, the weighing of babies, and control of malaria, leprosy, tuberculosis and goitre.

Health workers also visit schools to give health education, examine school children and give vaccinations.

Diarrhoea may cause dehydration.

Severe dehydration may cause death.

A mixture of boiled water, salt, soda and sugar should be drunk by people who get diarrhoea to replace the loss of water, salt and energy.

We can make the mixture ourselves.

If we do not have sugar, we can use rice water or watery porridge.

In attitude

The student should

like to have a clean place to live in;

like to practise daily personal hygiene and cleanliness;

not like to use things belonging to others;

like to go to the nearest health unit if he is sick.

SUGGESTED LEARNING EXPERIENCES

Read the health textbook.

Talk about harmful plants and animals around us.

Observe small particles in a beam of sunlight and see that there are small plants and animals which are barely visible.

Experiments

a) show enlargement through a glass of water.

b) show enlargement through a magnifying lens.

c) show enlargement through a microscope.

Talk about transmission of communicable diseases.

Demonstrate the transmission of disease.

Talk about the control of communicable diseases.

Talk about and demonstrate personal hygiene.

Talk about cleanliness of the surroundings in relation to the transmission of disease.

Talk about caring for animals.

Initiate a project to make a school latrine and garbage pit.

Draw pictures of a good house.

Appendix III

SIGNS OF HEALTH AND ILL-HEALTH

The teacher can recognize the early symptoms of many diseases by the observation of the physical and behavioural changes of the student.

The healthy student will look and behave normally. As soon as the student feels unwell, his behaviour changes. He will not be as active as when he felt well. His physical appearance will also change. The student may not tell you that he is not well, but you may notice that he is sick. Sometimes, the student may be embarrassed to tell the teacher that he is ill, or he may feel that it is a minor thing that is not important enough to report. So it is necessary for the teacher to improve his ability to recognize the early signs of illness in a student, so that the teacher can take immediate action and give minor treatment or send the student to the nearest health unit or hospital.

The following are the general signs of healthy and unhealthy students and some specific signs which can be observed through the physical appearance or behaviour of the student.

GENERAL SIGNS OF A HEALTHY STUDENT

- 1 Steady growth. This can be identified through the normal increase of weight and height. It will show on the growth chart.
- 2 Active, gay and loving.
- 3 Clean and bright eyes.
- 4 Rosy lips and pink tongue.
- 5 Likes to play and enjoys intervals.
- 6 Fresh and shining skin and hair.
- 7 Socially well adjusted.

GENERAL SIGNS OF AN UNHEALTHY STUDENT

- 1 Irregular growth.
- 2 Gets easily tired and lacks energy.
- 3 The muscles are loose.

- 4 Inactive and lazy.
- 5 Skin, lips and hair are pale.
- 6 Dull eyes.
- 7 Does not like to play.
- 8 Absent from school often.
- 9 Goes to the lavatory too frequently.
- 10 Shy and nervous while answering questions, uneasy, bites nails and has uncontrolled movements.
- 11 Isolated from his peers and is un-cooperative.

SPECIFIC SIGNS OF AN UNHEALTHY STUDENT

Eyes

- 1 Rubs eyes excessively (attempts to brush away blur).
- 2 Frowns a great deal.
- 3 Holds books or small objects close to eyes.
- 4 Shuts or covers one eye.
- 5 Draws head forward when looking at objects.
- 6 Blinks more than usual.
- 7 Sensitive to light.
- 8 Unable to participate in games requiring distant vision.
- 9 Eyes appear red, eyelids swollen, eyes water, pus discharge present, has a squint.
- 10 Complaints:
cannot see well, has double vision, dizziness, headaches, nausea.

Ears

- 1 Closes ear with his hand.
- 2 Pus discharge from ear.
- 3 Swelling under ear.
- 4 Cannot hear properly.
- 5 Complaints:
Ear pain, does not hear clearly.

Nose

- 1 Mucus discharge.
- 2 Difficulty in breathing through nose.
- 3 Redness.
- 4 Change in voice while speaking.
- 5 Complaints:
pain in chest or throat.

Mouth

- 1 Dry lips.
- 2 Wounds at the corners of the mouth.
- 3 Wounds on lips.
- 4 Dirty tongue.
- 5 Cannot pronounce words properly.
- 6 Enlarged red tonsils.

Feet

- 1 Does not walk properly.
- 2 Swollen feet.
- 3 Feet are painful.

Stomach

- 1 Holds stomach with hands often.
- 2 Goes to the lavatory frequently.
- 3 Has stomach-ache and diarrhoea.

Appendix IV

FIRST AID

What is First Aid?

It is the skilled application of accepted principles of treatment when an accident occurs, or when there is a case of sudden illness, using materials and facilities available at the time.

What are the aims of First Aid?

- 1 To sustain life.
- 2 To prevent the condition of the casualty from becoming worse.
- 3 To promote recovery.

What are the responsibilities of a person who gives First Aid?

- 1 To assess the situation.
- 2 To diagnose the casualty.
- 3 To give immediate and adequate treatment.
- 4 To arrange for further treatment.

What are the initial actions a person giving First Aid should follow?

- 1 To be calm.
- 2 To give confidence to the conscious casualty. Talk to, listen to and reassure the injured person.
- 3 To check breathing, bleeding and consciousness.
- 4 To remove the casualty to a safe place.

What are the types of treatment provided?

- 1 Sustain life
emergency resuscitation (revival of life)
control bleeding and shock

- 2 Prevent the condition from becoming worse
cover wounds
immobilize fractures
place the casualty in a correct and comfortable position
- 3 Promote recovery
reassure
relieve pain
handle gently and carefully at all times
move as little as possible, protect from cold

Severe accidents such as a fall, an accident, sunstroke, and drowning may cause unconsciousness. Try and identify the level of consciousness of the casualty.

- 1 Full consciousness
- 2 Drowsiness—he is easily roused but lapses into unconsciousness.
- 3 Stupor—he can be roused with difficulty and is aware of a pin prick.
- 4 Coma—he cannot be roused by any stimuli.

What are the common causes of the accidents that befall school children?

- 1 A fall while running, walking, jumping and climbing.
- 2 Bites and stings of poisonous animals such as snakes.
- 3 Touching poisonous plants.
- 4 Exposure to sun and cold wind.
- 5 Fire.
- 6 Drowning.

What are the precautions that should be observed when providing First Aid for these accidents?

- 1 Wash hands with soap before helping the wounded person.
- 2 Use a clean bandage, pads or cloth.
- 3 Clean the wound to prevent germs from getting into it.
- 4 Stop the bleeding.
- 5 Immobilize the fracture, dislocation or sprain.
- 6 Stop poison in the blood from reaching the heart.
- 7 Make the patient vomit to release the poison in the stomach.

- 8 Keep the patient conscious.
- 9 Help him to breathe regularly (artificial respiration).
- 10 Help the blood to circulate, by giving a heart massage. Help the patient to be as cool or warm as required.

What should the teacher do to provide First Aid at school?

- 1 The teacher should undergo training on First Aid.
- 2 The teacher may put a First Aid box in the school.
- 3 He should also teach First Aid to the older students so that they may provide First Aid to other students.

Appendix V

NOTES ON THE NUTRITIONAL ASSESSMENT PORTION OF THE NEW STUDENTS' HEALTH AND NUTRITION RECORD

- 1 The nutrition record is a record of the health and nutritional status of each student throughout his school career. It should be carefully maintained and filed, and sent to the new school if a child changes school.
- 2 The nutritional section of the Health and Nutrition Record should be completed in MAY and NOVEMBER of each year. It is important to stick to these two months and not carry out the examinations according to convenience. This is to ensure that the child is seen under similar conditions each time so that comparisons are possible from year to year. In May the child has been back from home for a few months and in November he is seen just before the winter vacation.
- 3 All measurements and examinations should be carried out only by the teacher who has been trained in these aspects.
- 4 *Age.* Though there are difficulties in ascertaining the date of birth, every attempt should be made to obtain some indication of the date of birth. The child's Lopta and/or other concomitant events at the time of his birth will be useful indicators when questioning the parents.
- 5 *Height.* This should be measured using a simple measuring board made locally according to the design used in the training programme. A mark on the wall is not always satisfactory, as errors are usually introduced in marking off the points and in taking the measurements. Metal measuring tapes should be used to calibrate the measuring board as cloth tapes are usually unreliable. A wooden measuring board should be checked every six months against a metal tape to check for any shrinkage in the wood. The height should be taken without footwear with the child standing erect and with the heels together. The head, back of the heels, the buttocks and the upper back should be in contact with the measuring stick. The measurement is taken at the

- highest point of the head with the child facing straight ahead, and recorded to the nearest half cm.
- 6 The weight should be recorded using a reliable bathroom type of scale graduated in half kg divisions. The balance should be checked against known weights daily, when it is used, and suitable adjustments and zero corrections made.
The child should be weighed with the minimum of clothing. During summer, the boys and smaller girls could be weighed in light underwear or shorts. During winter a sample of the clothing especially those of bigger girls, should be weighed separately and the necessary correction made to the final weight.
 - 7 The weight/height category is determined after the height and weight are taken, using the growth charts provided. There are separate charts for boys and girls. The scheme for allocation of categories is given at the bottom of the Nutritional Assessment Card.
 - 8 *Goitre*. Enlargement of the thyroid or goitre is the result of deficiency of iodine in the diet and is widely prevalent in Bhutan. Grading is according to the scheme given in the Nutritional Assessment Card. The thyroid gland is considered to be enlarged only if it is larger than the last joint (phalanx) of the child's thumb.
 - 9 *Angular Stomatitis*. Angular stomatitis is often due to vitamin B₂ or riboflavine deficiency and manifests itself as pale areas in the angles of the mouth with fissuring or cracks. It is only noted if present in both angles of the mouth.

NOTES ON THE USE OF THE WEIGHT-FOR-HEIGHT CHARTS

- 1 Weight for Height is sensitive to short-term changes in the nutritional status and any deficit is an indication of acute or recent undernutrition.
- 2 Separate charts have been prepared for boys and girls and those should be used appropriately.
- 3 Each school will be provided with a few of these charts. The charts are meant for use for the school as a whole and not for each child. Hence only light pencil marks should be made when grading children and the charts preserved for further use. They should preferably be mounted on a cardboard and covered with thin polythene.

- 4 For convenience of assessing changes, the following categories of innutritional status are proposed for both boys and girls:

Category 1	Over 100% of median or reference standard
Category 2	Over 90% to 100%
Category 3	Over 80% to 90%
Category 4	Over 70% to 80%
Category 5	Over 60% to 70%
Category 6	60% and below

 These categories do not follow conventional usage, but they are meant to facilitate an easy assessment of changes in nutritional status.
- 5 Children falling exactly on a line (e.g. on 80%) should be included in the next lower category, which in this example would be Category 4 (as Category 4 is over 70% to 80%).
- 6 Children falling outside the height scale cannot be graded and their category should be denoted with a —
- 7 Children falling within the height scale, i.e., from 90 cm to 175 cm for boys and 90 cm to 162 cm for girls, but outside the weight scale, can be graded and should be allotted a category.
- 8 The total of each of these categories for the whole school should be entered in the consolidated Half Yearly Statement for each school. In addition, you should also calculate and enter in the same form, each category as a percentage of the total number of children graded (not of the total number of children examined).

e.g., Total enrolment	500 children
Total examined	480 children
Total graded	450 children
Total children in Category 6	15 children

$$\text{Therefore \% children in Category 6} = \frac{15 \times 100}{450} = 3.3\% = 3\%$$

9. Percentage figures should be rounded off to the nearest whole number. Hence in the example above 3.3% reads 3%
10. An improvement is judged by
 - (a) a fall in percentages in Categories 4, 5 and 6.
 - (b) a rise in percentages in Categories 1, 2 and 3.

Appendix VI

SOME COMMON DISORDERS

A. NUTRITION PROBLEMS

1. GOITRE

Cause

The enlargement of the thyroid gland in the neck is called a simple goitre. It is due to lack of iodine in food and water, and is common in high mountainous areas.

Clinical picture

It can be graded according to its size.

Grade 1 When the head is extended backward, a small swelling is seen on both sides and in front of the neck. The swelling is bigger than the subject's thumb.

Grade 2 Goitre is easily visible with the head in the normal position.

Grade 3 Very large goitre, recognized at a distance, disfiguring and may cause difficulty with wearing clothes around neck.

Treatment

Injections of iodine, or operation to remove a very large gland.

Prevention

Iodine supplementation with iodized salt. Iodine is an essential nutrient for man. It is necessary for the production of thyroid hormones, which have an important role in ensuring the normal functioning of all the cells of the body.

One of the factors affecting the output of thyroid hormones by the thyroid gland, is the availability of iodine. In the absence of sufficient iodine, the gland attempts to compensate for the deficiency by increasing its secretory activity, and this causes the gland to enlarge

2. PROTEIN-CALORIE MALNUTRITION (PCM)

Two varieties of PCM can be found: Marasmus and kwashiorkor.

MARASMUS

Cause

Starvation in infancy. The child does not get enough protein and carbohydrate.

Does not get enough breast milk because of a poor supply of milk.

The mother may be ill or dead.

Artificial feeding.

Clinical picture

The baby fails to gain weight.

The baby is small for its age with no body fat.

The hair is thin and dry.

Constantly cries and sucks his fists.

Treatment and prevention

Severe causes of marasmus need admission to hospital, together with the mothers, so that they can be taught how to feed the babies well.

All babies should be weighed regularly so that PCM can be detected in time.

Artificial food must never be used except when there is no breast milk available. If it has to be used, it must be made up according to the instructions on the tin.

KWASHIORKOR

Cause

Lack of protein in food.

It begins when the child is weaned, at one to three years of age, if the child is given too little protein food.

It becomes obvious after an infection such as measles or gastroenteritis.

Clinical picture

The child fails to gain weight or height, and later, weight is lost.

The child cries constantly, does not play, and refuses the food offered. There is often some diarrhoea.

There is swelling, first of the face, then the feet, but it may become a general condition.

The muscles are thin and flabby.

The child's hair may become reddish.

The face becomes pale.

Prevention and treatment

Teach parents to feed the child with protein foods, such as eggs, meat, beans, milk, etc.

Encourage the mother to breast-feed the child for the first two years.

Avoid bottle feeding.

3. VITAMIN DEFICIENCIES

- 1 Vitamins are chemical substances which are needed in small amounts for health and growth, but which the body is *not* able to make for itself. They must therefore be taken in the food.
- 2 Vitamin deficiency diseases occur when a person has a poor diet.
- 3 Vitamin deficiency is most likely to occur in growing children, and in women who are pregnant or breast feeding babies. More vitamins are needed at these times.

VITAMIN A DEFICIENCY

- 1 Vitamin A is found in dark green vegetable leaves, yolks of eggs, red palm oil, milk and butter.
- 2 Deficiency of vitamin A damages the eyes and the skin.
- 3 The effects on the eyes are
 - a) the patient cannot see properly in dim light (night blindness).
 - b) the conjunctiva of his eye becomes dry, thick and wrinkled.
 - c) in severe cases, the cornea becomes cloudy, it may then quickly become softer and burst, leaving the eye blind.
- 4 The effects on the skin are the skin is rough and dry especially over the thighs and back of the arms.

Prevention

Eat eggs, green leafy vegetables, etc.

VITAMIN B COMPLEX DEFICIENCY

Vitamins in this group are found in green leafy vegetables, peas, beans and meat.

Clinical picture

- 1 Beri-beri: swollen feet, which leads to heart failure.
- 2 Pellagra: the skin is reddened where it is exposed to the sun. Later it becomes thick and brown. The tongue becomes red.
- 3 Angular stomatitis: moist red cracks are seen at the angles of the mouth.

Prevention

Eat the foods containing the necessary vitamins.

VITAMIN C DEFICIENCY

Eat fresh fruit and vegetables. Vitamin C is found in fresh fruit and vegetables. Oranges and lemons contain plenty of this vitamin. The gums become bluish-red, swollen and bleed easily. The breath smells bad.

VITAMIN D DEFICIENCY

Vitamin D is found in eggs and butter. Vitamin D is also made in the skin by the effect of sunlight. Children in the first 2 years of life often develop rickets if they do not go out in the sun or have extra vitamin D added to their food. Bones become soft, and the ends are enlarged.

Prevention

Allow children to play in the sun without too many clothes on. Give children eggs and butter to eat.

4. ANAEMIA

A person is anaemic when his blood contains too little of the red substance haemoglobin.

Haemoglobin is carried by the red blood cells.

Iron is required for its formation.

Cause

It is most often due to hookworm infection, or lack of iron containing foods.

It can also be caused by bleeding from the delivery of a baby or chronic infection.

Sometimes the bone marrow fails to make red cells properly.

Clinical picture

Becomes tired easily.

The skin is pale.

In severe anaemia, feet may swell.

Complains of dizziness.

Prevention and treatment

Eat green leafy vegetables, meat, eggs, peas and beans.

Go to the health units for treatment.

B. COMMUNICABLE DISEASES

A disease is an active process, involving disturbance, or malfunctioning, or a pathological condition of the body or mind. In other words, if any part of the body is not functioning properly, it can be described as diseased. Disease includes abnormalities of structure, psychosomatic disturbances and personal changes. Disease does not occur without a cause, and is usually produced by a combination of many factors.

Epidemiology studies all the factors that affect the course of health or disease in a population. It deals both with populations, and individuals, by examining a disease and where and when it occurs, in an attempt to find and explain those things that contribute to its appearance. Some of the findings will be discussed to give the teacher some knowledge about the causes of diseases.

The causes of disease

There are many different causes of disease.

- 1 Communicable diseases. These are diseases caused by harmful parasites and can be passed from one man or animal to another, either directly or indirectly. Some are caused by viruses, others by bacteria or worms.
- 2 Deficiency diseases. These occur when the body does not get

enough of a substance which it needs to remain healthy, as in the case of protein and calorie malnutrition.

- 3 Physical causes. These are caused by injuries, burns, drowning and similar accidents.
- 4 Diseases caused by an abnormal functioning of a part of the body, such as diabetes mellitus.
- 5 Degenerative diseases. These are chiefly diseases of old age such as osteoarthritis.
- 6 Diseases present from birth, passed on from parent to child, such as sickle cell anaemia; or damage during birth such as paralysis, cerebral palsy.
- 7 New growths, which include cancers.
- 8 Mental disorders; some of these are due to personal problems met in life.
- 9 Diseases of uncertain cause (e.g., heart disease).

Parasites that cause communicable diseases

The agents or parasites which cause communicable diseases vary greatly in size; they may be so small (viruses) that they cannot be seen under an ordinary microscope, or several feet long like tapeworms. These parasites are sometimes called *germs*.

- 1 Viruses are the smallest living things known. Viruses can pass through a fine filter which will hold back bacteria. Examples are the viruses of the common cold, and measles.
- 2 Rickettsiae are larger than viruses and can be seen with the light microscope. An example is typhus.
- 3 Bacteria. Some bacteria live freely in the soil, and some can form resistant spores which are not easily killed by heat or disinfectants, e.g., tetanus.
- 4 One-celled organisms or protozoae are easily seen under the microscope.
- 5 Fungi are simple living organisms composed of more than one cell. Fungi usually attack the skin.
- 6 Worms or helminths are made up of many cells and are visible to the naked eye. An example are roundworms.
- 7 Mites. A tiny many-celled animal: Example—mites of scabies.

Ways in which diseases are spread directly

- a) Transmission by droplets.
- b) Transmission by direct contact (e.g., skin contact)

- c) Transmission by the faecal-mouth route (eg., through vomit, faeces, fingers, food, water).

Ways in which diseases are spread indirectly

- Parasites with a free-living stage in the earth—they develop outside the body.
- Diseases transmitted by insects.
- Diseases which must pass a stage in another animal.

Control of communicable diseases

There are three main ways in which a disease can be controlled.

- By removing the source of infection.
Finding and curing all cases of active lung tuberculosis will prevent others being infected.
- By preventing the transmission of the disease.
Killing the anopheles mosquitoes.
Safe food and water supplies and control of flies will prevent the spread of diseases by the faecal-mouth route.
- By protecting each individual.
Immunization.
Drugs, pyrimethamine (Daraprim) to prevent malaria.
Good health habits.

C. DIARRHOEAL DISEASES

Diarrhoea means the passage of frequent soft or watery stools usually three or more times in a day. It is often accompanied by vomiting, as in gastroenteritis or cholera. It is also called a 'Filth Disease' (because it is very common where the standards of personal and public hygiene are poor). If blood and mucus are present in the stools, the condition is called dysentery.

Dehydration

The main danger of diarrhoea and vomiting is that so much water and salt is lost, that the body becomes dehydrated, and the circulation of blood cannot be kept up. Many babies with gastroenteritis die from dehydration.

Transmission

The diarrhoeal diseases are all spread by the faecal-mouth route.

Germs in the faeces of an infected person with unhygienic habits get on to his hands, and from his hands, may pass into his or other people's food, and so be carried to others.

The faeces may infect water which others will later drink.

Flies, cockroaches, other insects and rodents also help to spread these diseases by carrying bacteria from faeces to food.

Prevention

1 *Good personal hygiene, cleanliness, environmental sanitation*

Always use a well-made latrine when passing stool or urine.

Keep the latrine clean and free from flies.

Wash your hands after passing stool and before preparing food and taking a meal.

Keep food covered to prevent flies from settling on it.

Do not store food for long after it has been cooked (unless it can be refrigerated).

Keep houses and compounds clean and free from rubbish, because flies breed in dirt and rubbish.

Boil all drinking water, unless it comes from a safe supply.

2 *Good public hygiene*

A safe and plentiful supply of water.

Sanitary refuse disposal

Inspection and control of animal slaughter, food markets, shops and restaurants.

Health education of the public to make them understand how these diseases are caught and the ways in which they can be avoided.

1. GASTROENTERITIS

Cause

By bacteria, viruses, foods or medicines which irritate the system.

Poorly fed children are likely to suffer from gastroenteritis.

It is the most frequent cause of death in young children.

The feeding of babies from dirty bottles is a common cause.

Clinical picture

The child begins to vomit after eating and passes frequent stools.

The stools are watery and greenish, and often contain mucus.

The child may cry because of abdominal pain just before the stool is passed. There may be a slight fever.

Much water and salt is lost in the vomit and stools. If the child is unable to drink enough to replace it, he becomes dehydrated, and this can kill him.

The signs of moderate or severe dehydration are

The child stops playing and is not interested in what goes on around him.

The tongue is dry and furred.

The eyes, and in a young baby, the fontanelle, on the top of the skull, become sunken.

The skin becomes so loose that if it is picked up between the finger and thumb and then released, it does not quickly spring back into place.

There may be deep breathing and sighing. This is a danger sign.

At a late stage, the pulse becomes rapid and feeble, the blood pressure falls, and the skin is cold.

Severe dehydration can rapidly lead to death if it is not checked in its early stages.

Complications

The most important complication is dehydration.

Thrush of the mouth and tongue is common. It may make the mouth sore and prevent the baby from drinking.

Soreness around the anus is common.

Prevention and treatment

- 1 As it is difficult to keep feeding bottles as clean as required breast-feeding should always be encouraged whenever it is possible.
- 2 Practise good health habits.
- 3 Give rehydration (boiled water, salt, soda and sugar) to anyone suffering from diarrhoea.
- 4 If it is serious, send the child to the BHU or hospital.

2. FOOD POISONING

The incubation period can last for a few hours or up to two days.

Cause

Usually bacteria which have got into the food cause food-poisoning. Some types of bacteria can only cause diseases when they are alive. Cooking will kill these bacteria and make the food safe.

Other bacteria produce poisons which are not destroyed by cooking.

Occasionally poisonous plants which have been eaten cause food-poisoning.

Any sort of food may be affected, but milk or meat is contaminated more easily than other foods especially if they are kept for several days after they have been cooked.

Clinical picture

With bacterial poisons, the illness begins suddenly. There is intermittent vomiting, abdominal pain and diarrhoea. The patient may appear very ill and have a subnormal temperature. Recovery may take place within a few hours.

With living bacterial infections, the symptoms begin to show more slowly. Fever is common and the stools are watery and smell unpleasant. The patient may be ill for several days.

Prevention and treatment

Report cases to health workers.

Isolate the patient in a room and take great care while disposing of his stool.

Give the patient a mixture of water, salt, soda and sugar to drink (rehydration drink).

Send the patient to the BHU or hospital.

3. CHOLERA

Cholera is caused by a bacterium, the cholera vibrio (*vibrio cholerae*). Incubation period: 2 or 3 days (sometimes up to 5 days).

Clinical picture

Cholera starts suddenly with diarrhoea and vomiting which soon becomes very severe. Large amounts of stool are passed without much effort.

The stools are watery and contain white shreds of mucus. They look like rice water.

The patient becomes dehydrated. His eyes are sunken. His skin can be picked up in folds and it returns to its position only very slowly. His fingers are wrinkled. His pulse is fast and feeble.

Adults with cholera have no fever.

Children often have some fever, and they may become unconscious or have convulsions.

Transmission

By the faecal-mouth route, but the vomit is also infectious. Epidemics of cholera are usually due to faecal contamination of water in rivers, streams or wells.

Prevention

Cholera can only spread where hygiene is poor and food and water become infected. A safe water supply, clean food, and the use of proper latrines offer protection.

Boil all water used for drinking or washing.

Wash hands before preparing food and taking a meal, and after passing stool.

Eat only well cooked food.

Keep food covered to prevent flies and other filthy insects from contaminating it.

Isolate the patient.

Stool and vomit should be thrown into a proper latrine.

Clothes and bedding should be sterilized by soaking them in diluted lysol or boiling them.

Wash your hands thoroughly after attending to the patient.

Report every case to the BHU or hospital.

4. TYPHOID FEVER [ENTERIC FEVER]

Cause

The typhoid bacillus.

Transmission

Typhoid is spread by the faecal-mouth route.

The bacteria are carried in the faeces of people suffering from typhoid, or from the faeces of carriers who are not ill but still carry infection. If the faeces contaminate food or water, the bacteria may then be swallowed by other people.

Flies may also carry bacteria from faeces to food.

Incubation period: 10 to 14 days.

Clinical picture

Starts with a slowly rising fever which is at its highest in the evening; the fever gradually rises for 5 days.

The patient complains of headache, is drowsy and slightly deaf.

There is often a little cough and diarrhoea, but no blood in the

stool. Abdominal discomfort and pains in the joints are also common.

Fever continues for about 3 weeks.

Typhoid produces ulcers in the small intestine.

The patient may suddenly complain of severe and continuous abdominal pain. He gradually becomes very sick and may die.

The ulcers may bleed during the third week. The patient then passes black or dark red blood from the rectum.

Prevention

Everyone must pass faeces in a proper latrine.

Hands must be washed after passing faeces and before preparing food or eating.

Water must come from a proper source.

No part of the water supply must be allowed to be soiled by faeces.

Milk and any other kind of food must be kept clean, and covered against flies and other insects.

5. THREADWORM INFECTION (PINWORM)

Cause

The threadworm is a very small thread-like worm which lives in the large intestine. The female worm is about 1 cm long.

Clinical picture

Threadworms are most troublesome in young children, but often all members of the family become infected.

The female worm lays eggs, around the anus, usually at night and this causes intense itching and scratching.

Transmission

By the anal route. At night, the female threadworm passes through the anus and lays her eggs on the skin. This causes itching and when the patient scratches, eggs stick to the fingers. If the fingers are now put into the mouth, the patient is reinfected with threadworms.

Threadworm eggs also get into the bedding and house dust making it possible for other people to easily swallow them and become infected.

Prevention

Cut finger nails short.

Pass stool in a proper latrine.
Wash hands carefully after passing stool and before eating.
The patient and also other members of the family should have treatment.

D. SKIN DISEASES

1. SCABIES

Cause

The itch mite; the tiny female mites burrow into the skin and lay their eggs.

Transmission

By close physical contact.

Clinical picture

Severe itching which is worse at night.
The patient scratches and this scratching produces skin damage.
The short thread-like burrows may sometimes be seen.
They are seen in the webs between the fingers, the inside of the wrists, the buttocks, the ankles, etc.

Prevention and control

Regular washing of the body and clothes with soap.
Regular bathing with soap.
Do not use other people's clothes, towels, handkerchiefs, and personal articles.
Put on clean clothes frequently.
Make sure that your bedding is clean.
A patient's clothes must be washed and boiled.
All other members of the family and of the same household should also be treated at the same time.

2. HEAD AND BODY LICE (PEDICULOSIS)

Cause

The human louse. Different varieties result in infection of the head or body and clothing.

Clinical picture: Head lice

Itching of the scalp.
Sometimes scratching produces infected crusts.
The eggs of the lice are seen as small greyish white objects firmly attached to the hairs.

Body lice

The bites of the lice may be seen as small pink spots which itch intensely.

The greyish white eggs (nits) are mostly found in the seams of the clothes.

Prevention and control

Regular washing of the hair and clothes with soap.

Bathing with soap.

Go to the BHU or hospital for treatment.

E. VIRUS DISEASES

1. INFLUENZA

Causes

The influenza virus. There are several different varieties of this virus. Some varieties make the patients more ill than others.

Clinical picture

The patient suddenly develops fever, with attacks of shivering, headaches and muscle pains.

There is a bad cough without sputum, which may continue after the other symptoms have stopped.

There may be a sore throat and a watery discharge from the nose.

Most patients recover in a few days by themselves but influenza can lead on to bronchitis or pneumonia.

Transmission

By droplets and direct contact. The patient remains infectious for 3 days after symptoms begin. Incubation period : 1 to 3 days.

Treatment and prevention

Put the patient into bed.

During an epidemic, people should not crowd together.

Wash with warm water.

2. MEASLES

Cause

The measles virus.

Clinical picture

Measles starts like a severe common cold. There is a high fever. The child is very miserable and has a running nose and eyes.

These symptoms last for 3 or 4 days before the rash comes and the child may be quite ill.

In some severe cases the rash is very dark.

After 5 to 6 days the rash begins to fade and there may be a fine peeling of the skin.

Complications

Complications of measles are commonest in poorly nourished children and this may cause death.

Very high fever. The child twitches, has a convulsion or becomes unconscious.

The skin feels dry and burning hot.

Pneumonia—the child breathes rapidly and has a bad cough.

Diarrhoea.

Infection of the ear. The ear discharge pus.

Laryngitis—change in his voice.

Thrush (white spots) in the mouth makes it painful for the child to drink and eat.

Malnutrition.

Tuberculosis.

The local traditions such as not giving the child water to drink make complications more likely.

Transmission

By droplets and close contact.

Measles is a highly infectious disease. The patient is infectious to other children for 5 days after the rash appears.

Incubation period : 10 to 14 days.

Treatment and prevention

The aim of treatment is to prevent complications.

Give the patient enough to drink and good food.

Do not allow other children who have not had measles to come near him.

Report the case.

Wash the child who has measles with warm water.

Children of 9 months (or older) can be protected from measles by immunization. Bring them to your BHU or hospital.

Do not send children with measles to school.

3. MUMPS

Cause

Mumps is chiefly a disease of children, but adults who have not had mumps in childhood can also suffer from mumps.

The patient has a mild fever and feels unwell.

The parotid gland swells. It becomes painful and tender. Opening the mouth and eating is painful.

One parotid gland may swell. The other gland may swell up a few days later.

After about a week the swelling goes down.

Treatment and prevention

Keep the patient away from those who do not have mumps.

The patient should eat semi-liquid foods as long as eating is painful.

Give the patient plenty of fluids.

Keep the mouth clean.

4. CHICKENPOX [VARICELLA]

Cause

The chickenpox virus.

Clinical picture

Chickenpox is usually a disease of children, but if an adult suffers from chickenpox, it is often severe.

On the first day of the illness, there is a slight fever and loss of appetite.

The rash usually appears on the first day as flat red spots which quickly become raised and develop into blisters. After 2 to 4 days, they develop into scabs.

The rashes come mainly over the face and body.

Transmission

By droplets and direct contact.

Incubation period: from 2 to 3 weeks. The patient is infectious the day before and for 6 days after the rash appears.

Treatment and prevention

Keep the patient away from others.

5. POLIOMYELITIS (INFANTILE PARALYSIS)

Cause

The poliomyelitis virus

Clinical picture

A disease usually of young children between 6 months and 5 years of age.

If it attacks an adult, paralysis is often worse.

There is a brief fever with general symptoms such as diarrhoea, vomiting or cough.

Paralysis develops while the fever is high.

Paralysis usually affects one or both legs, but it may spread to the arms, abdomen, chest muscles, neck and swallowing muscles.

It is not symmetrical.

The paralysed limb is floppy; a paralysed leg will swing quite freely. The muscles may be tender but there is no loss of the sense of touch or pin prick. The child is fully conscious.

The child is in great danger if he is unable to swallow or is not able to breathe properly.

During the first 3 months the patient usually improves and some muscle power returns but often muscles may remain completely paralysed.

Transmission

Chiefly by the faecal-mouth route, but it may also be spread by droplets or direct contact.

Incubation period: from 1 to 3 weeks. The patient may remain infectious for 6 weeks or longer.

Prevention and control

Report to the medical authorities or health officers.

The patient is infectious, stools must be thrown into a proper latrine. Any soiled articles should be soaked in disinfectant before they are washed.

Wash your hands after attending the patient and before preparing or taking food.

Immunize every young child with poliomyelitis vaccine. Bring the children to the BHU or hospital for immunization. The vaccine is usually given as drops and is taken through the mouth in 3 doses at monthly intervals.

6. RABIES

Cause

Rabies virus is a virus infection of the brain which affects dogs, cats, rats, bats and other wild animals.

Clinical picture

In a dog

During the first 3 days, the dog is irritable, wanting to escape and hide. He may do unusual things.

In the next stage, the dog becomes mad. He runs about unsteadily, snapping viciously at everything and emits a peculiar shrill cry.

He has spasms when frothy mucus and saliva come out of his mouth. During this 'furious stage', the dog is very dangerous. He may bite and spread rabies.

Paralysis develops after the furious stage, and the dog dies within 5 days.

In man

People who are bitten by a rabid animal may or may not develop rabies. The disease in man is similar to rabies in dogs.

The patient is usually fully conscious until death.

Anyone who develops rabies will die.

Transmission

People get rabies from the bite of an infected dog or other animal.

Dogs may get rabies from other dogs or from wild animals.

The saliva of the infected animal contains the rabies virus.

Therefore, if one's skin is broken, a lick from a rabid animal can cause rabies. The saliva of a dead rabid animal can also spread rabies.

Incubation period: 4 to 8 weeks usually, but can be 2 years.

Treatment

There is no treatment which can save a patient who has developed rabies.

Prevention

All suspected rabies cases (animals or man) must be reported to the Medical Health Personnel of a BHU or hospital.

Control of dogs through vaccination by the veterinary Animal Husbandry Department.

Go to a doctor when anyone is bitten by an animal, such as, a dog or cat.

F. RESPIRATORY DISEASES

1. TUBERCULOSIS

Cause

Tuberculosis is a chronic infectious disease caused by the tubercle bacillus.

In many developing countries, it is one of the commonest causes of illness and death.

Transmission

1 *By droplets*

People with active lung tuberculosis cough out millions of tubercle bacilli. The bacilli do not dry up and may survive in dust.

Other people may breathe in tiny droplets containing the bacilli directly or dust containing the bacilli and later develop tuberculosis of the lungs.

2 *By mouth*

Sometimes droplets contaminate food or drink. This food can then transmit tuberculosis to anyone who eats or drinks it.

Cows may have tuberculosis, and bacteria in their milk and may spread the disease to people who drink unboiled milk.

Clinical picture

At first the fever can only be noticed in the evening.

But in severe acute tuberculosis there is a high swinging fever. The patient is often drenched with sweat at night.

Loss of weight is an important sign, but it does not appear until much later.

Young children develop malnutrition.

In lung tuberculosis, coughing is the most important symptom.

You should suspect tuberculosis in any person who has a cough for 3 weeks or longer. Sputum is at first watery and mucoid, later there may be yellow pus in it. Sometimes there is blood.

Tuberculosis differs according to the part of the body affected.

There is lung tuberculosis, lymph node tuberculosis, abdominal tuberculosis, tuberculosis of the spine, and tuberculosis meningitis (infection around the brain).

Prevention

Lung tuberculosis is very infectious. The patient is the one who can spread the disease and so should be very quickly treated.

Babies and children must be immunized by the BCG vaccine.

It is provided in BHUs and hospitals.

Provide good ventilation in rooms.

Encourage people to build houses which are big enough for the whole family, and keep the windows open. Maintain a balanced diet and do regular exercise.

2. WHOOPING COUGH (PERTUSSIS)

Cause

The whooping cough bacillus.

Transmission

Whooping cough is highly infectious.

A child with the disease coughs out droplets containing bacteria which infect other children.

Incubation period : 7 to 14 days.

Clinical picture

Whooping cough is a disease of young children.

During the first week the illness is like a common cold and is highly infectious.

After a week, the cough begins to come in typical spasms. Each spasm is made up of rapidly repeated, short, sharp coughs and ends in a crowing intake of breath, the 'whoop'. Often he coughs out some sticky sputum and he may vomit.

In children below one year of age, whooping cough is a serious illness and many babies die.

Prevention

Immunization against whooping cough. Whooping cough toxoid is normally given as part of the triple vaccine (vaccine for diphtheria, whooping cough and tetanus), which should be given to infants after they are 3 months old. Three injections at

monthly intervals are needed. It is provided at BHUs and hospitals.

Children with whooping cough should be kept away from other children for 4 weeks.

No child under 2 years of age should be brought into the house of a child with this disease, unless he has been fully immunized.

3. THE COMMON COLD (CORYZA)

Cause

Infection of the nose and pharynx by one of several viruses. It is often followed by secondary bacterial infection.

Transmission

By droplets.

Clinical picture

A cold begins with a runny nose and sneezing. The eyes smart and water. Sometimes there is a sore throat.

At first, the discharge from the nose is colourless and watery but later, with secondary bacterial infection, it becomes thick and like pus.

Colds are usually mild illnesses, with little or no fever, but young children may have some fever. Babies may be unable to breathe properly because of a blocked nose.

Middle ear infection which causes a discharge and pus from the ear.

Prevention

People with a cold should stay at home and if it is a bad cold should go to bed.

Children and others must be kept away from people with colds.

Drink hot water and plenty of fluids. Wash in warm water.

G. OTHER DISEASES

1. TETANUS (LOCKJAW)

Cause

Tetanus is the result of the poison produced by the tetanus bacilli when it grows in the body.

Transmission

Tetanus bacilli live in the soil and in animal stools.

They get into the body through wounds.

Tetanus mostly attacks babies and mothers delivering them.

If the umbilical cord of a newborn baby is cut with unsterilized instruments, the baby may get tetanus.

Incubation period: often 5 to 14 days.

Clinical picture in adults and children

Any kind of wound can be infected by tetanus bacilli.

Babies may get tetanus.

Women may be infected with tetanus during childbirth in their homes.

Man gets tetanus through wounds which are infected by objects like rusty nails.

The first complaint is normally pain felt in the back, arms and legs.

The pain is due to contraction of the muscles. The neck, back and limbs become stiff and abdominal muscles feel hard.

The patient finds it difficult to open his mouth.

Some hours later his muscles begin to move spasmodically.

Muscular spasms are brought on if the patient is touched, or by a loud noise.

The patient is fully conscious.

There is usually some fever.

Newborn babies

Tetanus usually develops within a few days after the child's birth.

The baby stops sucking the breast properly because he cannot open his mouth.

The back and abdominal muscles become tense and hard. Later generalized spasms may occur, as in adults.

Complications

A very high fever may develop and kill the patient.

The patient's means of breathing may be blocked by muscular spasms.

Most patients die.

Prevention

Everybody should be immunized against tetanus by a course of

three injections of tetanus toxoid. It is best if repeat doses are given every 3 years.

In the first year of life, immunization against tetanus is normally combined with that against diphtheria and whooping cough, in the form of a triple vaccine.

Immunize the pregnant mother against tetanus.

Childbirth should take place in clean surroundings, and sterilized instruments must be used to cut the umbilical cord. The knife or scissors should be boiled properly before use.

Treat all wounds carefully to avoid tetanus.

2. CONJUNCTIVITIS

Mild conjunctivitis can result from exposure to cold wind, smoke or bright sunlight.

A foreign body in the eye can also cause conjunctivitis.

Severe conjunctivitis is usually caused by a bacterial infection of the eye.

Clinical picture

Complaints of a burning feeling in the eye.

Conjunctivitis reddens the eye and there is some discharge.

There is a lot of pus during bacterial infection.

The eyelids may be swollen and stuck together by dried discharge.

Children under 5 years are most frequently affected.

Treatment

Wash away the secretion with clean cotton wool moistened with warm water.

Transmission

Contact with discharges from the infected persons through contaminated fingers, clothes, handkerchiefs, or other articles.

It is sometimes transmitted by flies.

Incubation: 1-3 days.

Prevention

Practise personal hygiene and cleanliness.

Hygienic care and treatment of affected eyes.

Report cases and send to the BHU or hospital.

Insect control according to the suspected vector.

Use only your own towel, handkerchief, clothes and other personal articles.

3. TRACHOMA

Cause

The trachoma virus.

Transmission

Direct contact with discharges from the eyes or nasal mucus membranes of an infected patient or by infected articles such as towels and clothes.

Flies can also spread the infection.

Clinical picture

Young children are most susceptible.

Slight irritation and scratching of the eyes, and there may be some blurring of vision. Both eyes are affected.

On the under surface of the upper eyelids small follicles which look like tiny pebbles can be seen.

There is no discharge from the eye.

A greyish film (pannus) may be seen over the uppermost part of the cornea. Later, the greyish pannus may extend over more of the cornea and tiny blood vessels may be seen growing into it. The cornea becomes dry. Infection with bacteria may cause corneal ulcers.

The eyelids become scarred and this scarring may turn the eyelids inwards. Eyelashes then rub against the eye, causing pain and damage to the eye.

Late treatment of trachoma can make the patient blind.

Prevention and treatment

Maintain cleanliness and personal hygiene.

People should wash with soap regularly.

Each person must use only his own towel and other articles.

Flies must not be allowed to rest on children's eyes.

Control flies.

Report cases of trachoma.

Go to the BHU or hospital for treatment.

4. MALARIA

Cause

The malaria parasite which lives mainly in the red blood cells.

There are two main types of malaria.

- 1 Benign malaria
- 2 Falciparum malaria (malignant tertian), the commonest form in the tropics.

Malaria can be confirmed if the parasites are found in the blood.

Clinical picture

At first, the patient may feel slightly unwell, with fever, headache, bodyache, tiredness and loss of appetite.

The patient has attacks of fever every third day.

In an attack, the patient firstly feels cold, then shivers. After a few minutes, he begins to feel hot, the temperature rises and he looks flushed. After about two hours, he sweats heavily and the temperature falls.

In between attacks, the patient of benign malaria usually feels well and may return to work. But the patient of malignant malaria continues to remain unwell.

Vomiting and diarrhoea are common. Anaemia, with pale lips, conjunctivae and tongue becomes obvious as the parasites destroy many red blood cells.

The patient may be ill but does not usually die from benign malaria.

The patient of malignant malaria may die due to complications such as those given below, unless he is treated at once.

The brain is affected. The patient becomes drowsy and complains of severe headache. High temperature and collapse are common.

Severe anaemia, rise of temperature, loss of much fluid with vomiting and diarrhoea.

Transmission

By the bite of the female anopheles mosquito. When the mosquito bites a person who has malaria, the mosquito takes in parasites which develop in the mosquito. In about 10 days the parasites are ready and a healthy person can be infected when the mosquito bites him.

Prevention

Avoid mosquito bites.

Use mosquito nets at night.

Cover the body with clothes in the evenings.

Control mosquitoes.

Spray houses with insecticides such as DDT.

Drain all stagnant water where mosquitoes breed.

5. EAR PROBLEMS

FOREIGN BODY IN THE EAR

Children often put things, such as pens, beads, sticks, into the ear.

Remove with great care, otherwise the eardrum may be damaged.

Do not try to remove a foreign body from a frightened or struggling child. Try to calm him down.

OTTITIS MEDIA DISCHARGING EAR

Middle ear infection is very common in young children.

It often comes after a cold or measles.

The first symptom is pain in the ear. A young baby cannot tell you he has pain, but you can suspect it because he is irritable and may pull at his ear or roll his head.

There is often some fever, and the patient may become deaf.

If the eardrum bursts, due to the infection, there is a discharge of pus from the ear.

Prevention

Keep the body and ears clean.

Prevent children getting complications when they have a cold or measles by ensuring that they receive proper medical treatment.

Send the child to the BHU or hospital for treatment.

6. TEETH AND GUM PROBLEMS

Strong healthy teeth and gums are important because:

- 1 Sore gums and decayed teeth become painful, so that teeth may have to be taken out.
- 2 Painful or missing teeth make eating slow and difficult. The food is then not broken down properly.
- 3 Severe gum infections can make a person feel ill.

TOOTH DECAY

Cause and clinical picture

After each meal food may remain in the cracks on the top of the teeth, or between the teeth. Bacteria live on this food, and make an acid which dissolves a little bit of the tooth. A small hole begins and gets bigger unless something is done to stop it. At this stage a dentist can remove the bad (decayed) part of the tooth and place a filling in the hole. If this treatment is not given the hole gets bigger, and as it gets nearer the nerve the patient feels pain. At first, the symptom of decay, the pain is only felt when eating hot, cold, sweet and acid food. Later the pain is constant and severe. An abscess may form.

GINGIVITIS [INFLAMMATION OF THE GUMS]

Cause and clinical picture

Soreness and bleeding of the gums.

Due to bacteria growing in food left around and between the teeth.

If the patient does not keep his mouth clean, the condition gets worse and the infection spreads down towards the roots, destroying the tiny fibres attaching the tooth to the jaws. Later, the tooth becomes loose and painful and it may have to be extracted.

Gingivitis is made worse by 'tartar', a hard substance which sticks to the teeth that are not kept clean. Tartar is most often seen behind the lower front teeth. It may not be easy to see on the back teeth, as much of it is hidden under the gum.

Prevention

Avoid eating foods such as sweets, cakes, and biscuits that are sticky and contain sugar.

Foods that are good for the teeth are firm and fibrous vegetables and fruit such as pineapple, mango, apple and carrot. It is good to eat one of these foods at the end of a meal.

Brush the teeth regularly after each meal, or at least twice a day, once in the morning and once before going to bed.

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