

LECTURE NOTES

Health Science Students

Maternal and Child Health Care



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University of Gondar

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Preface

I have been teaching Maternal and Child Health course, for Health Officer,

Public Health Nursing, Clinical Nursing, and Midwifery students for the last five years. To prepare this lecture note, specially for degree students, I have tried to compile and emphasis on issues that the students, specially health Officers, recommended as a) very relevant for their future practice b) areas which are not given much emphasis in Gyn-Obs and paediatric attachments in relation to MCH Care c) to give less emphasis on topics focused on diploma programmes d) to give priority for selected issues as the time allocated for this course is only 2 credit hours and the preparation of the lecture note has to be governed by the time allocated.

In preparing this lecture note, I have given serious concern for the time allocated. As a result, emphasis is given on selected topics as MMR, PNM, abortion, family planning, ANC, anaemia. Due to this reason very important topics such as ARI in children, child abuse, sexual violence etc. cannot be included in the lecture. But they are supposed to be covered by assignments and group discussion.

The contents of the lecture note are gathered and compiled from a variety of sources including notes from my student days, books, journals. from WHO manuals , bulletins over the years. And I also took some issues, which I thought are very descriptive, from my previous colleagues in the Department of Community Health In GCMS.

Assignments and topics for group discussions are given after the major topics and students have to discuss it in class after submitting their assignment paper. Other relevant and important topics will be raised in-group discussion. I have initially prepared this lecture note to be use mainly by health Office students. But Medical students can use it, even though they do not have aseparate MCH class.

If the curriculum improves in terms of credit hour it is possible to improve the content of this lecture note by addressing questions like abuse, violence, disability etc.



Acknowledgments

I want to thank the Carter Centre for helping me, through the Ethiopian Public Health Initiative, in preparing this lecture note. I want also to thank members of the Department of Community Health whom I took parts of Maternal and Child health notes such as School health services, which I find it to be very important. My thanks again go to members of the Department of Community Health, GCMS, for reviewing the note and gave me very valuable and constructive comments. I want also to thank Ms. Carla Gale , the resident Technical adviser for the Carter Center and Ato Aklilu Mulugeta for facilitating the helping am



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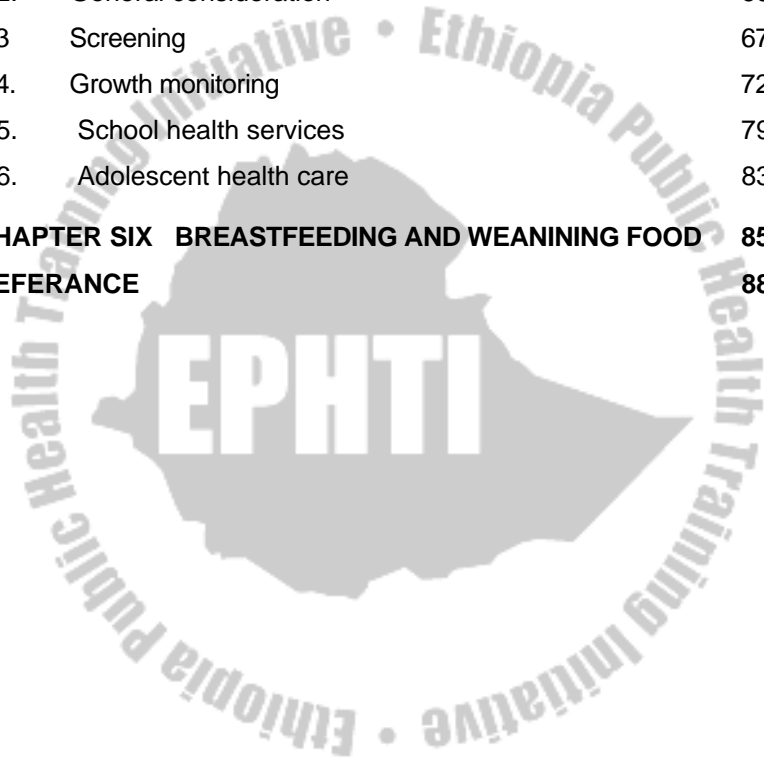
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Abbreviations

ANC	-	Ante Natal Care
APH	-	Ante Partum Haemorrhage
ARI	-	Acute respiratory Infection
CBD	-	Community Based Distribution
CMR	-	Child Mortality Rate
CPR	-	Contraceptive Prevalence Rate
EPI	-	Expanded Programme On Immunisation
FGM	-	Female Genital Mutilation
FP	-	Family Planning
IMR	-	Infant Mortality Rate
LBW	-	Low Birth Weight
MCH	-	Maternal and Child Health Care
MMR	-	Maternal Mortality Rate
MOH	-	Ministry Of Health
ORT	-	Oral Rehydration Therapy
PHC	-	Primary Health Care
PNC	-	Post Natal Care
PNM	-	Peri Natal Mortality
PPH	-	Post Partum Haemorrhage
RSS	-	Risk Scoring System
SES	-	Socio Economic Status
TTBA	-	Trained Traditional Birth Attendant
VAD	-	Vitamin A Deficiency
VVF	-	Vesico Vaginal Fistula
WHO	-	World Health Organization

CHAPTER ONE

Introduction

Maternal and child health (MCH) care is the health service provided to mothers (women in their child bearing age) and children. The targets for MCH are all women in their reproductive age groups, i.e., 15 - 49 years of age, children, school age population and adolescents.

Throughout the world, especially in the developing countries, there is an increasing concern and interest in maternal and child health care. This commitment towards MCH care gains further strength after the World Summit for Children, 1991, which gave serious consideration and outlined major areas to be addressed in the provision of Maternal and Child Health Care services.

1.1 Justifications for the provision of MCH Care

Why should the care of mothers and children needs major consideration and be part of every programme that is taking care of people's health?

The important considerations and justifications include:

- Mothers and children make up over 2/3 of the whole population. Women in reproductive age (15 – 49) constitute 21%, pregnant women, 4.5%, children under 5, 47%, children under 5, 18%, under 3: 12% and infants: 4%.

(This working estimate is very important in developing countries for project planning and implementation)

- Maternal mortality is an adverse outcome of many pregnancies. Miscarriage, induced abortion, and other factors, are causes for over 40 percent of the pregnancies in developing countries to result in complications, illnesses, or permanent disability for the mother or child. About 80 percent of maternal deaths in are directed obstetric

deaths. They result "from obstetric complications of the pregnant state (pregnancy, labour, and puerperium), from intervention, omissions, incorrect treatment, or from a chain of events resulting from any of the above.

- Most pregnant women in the developing world receive insufficient or no prenatal care and deliver without help from appropriately trained health care providers. More than 7 million newborn deaths are believed to result from maternal health problems and their mismanagement.
- Poorly timed unwanted pregnancies carry high risks of morbidity and mortality, as well as social and economic costs, particularly to the adolescent and many unwanted pregnancies end in unsafe abortion.
- Poor maternal health hurts women's productivity, their families' welfare, and socio-economic development.
- Large number of women suffers severe chronic illnesses that can be exacerbated by pregnancy and the mother's weakened immune system and levels of these illnesses are extremely high.
- Infectious diseases like malaria are more prevalent in pregnant women than in non-pregnant women (most common in the first pregnancy). In addition, an increasing number of pregnant women are testing positive for the human immunodeficiency virus. In Sub-Saharan Africa, 3 million women are estimated to be infected with the AIDS virus and a woman with HIV has a 25 to 40 percent chance of passing the infection on to her fetus in the womb or at birth.
- Many women suffer pregnancy-related disabilities like uterine prolapse long after delivery due to early marriage and childbearing and high fertility.
- Nutritional problems are severe among pregnant mothers and 60 to 70 percent of pregnant women in developing countries are estimated to be anaemic. Women with poor nutritional status are more likely to deliver a low-birth -weight infant.
- Majority of perinatal deaths are associated with maternal complications, poor management techniques during labour and

delivery, and maternal health and nutritional status before and during pregnancy.

- The large majority of pregnancies that end in a maternal death also result in fetal or perinatal death. Among infants who survive the death of the mother, fewer than 10 percent live beyond their first birthday.
- Ante partum haemorrhage, eclampsia, and other complications are associated with large number of perinatal deaths each year in developing countries plus considerable suffering and poor growth and development for those infants who survive.
- Development impairments among children due to poor management during labour and delivery.
- Low birth weight babies. Because many women are fed less, marry early, carry a heavy workload, and spend a considerable portion of their lifespan in pregnancy and lactation, they are exposed to persistent low nutritional status and high-energy expenditure. This predisposes mothers to bear low-birth-weight infants.
- Women often lack access to relevant information, trained providers and supplies, emergency transport, and other essential services.
- Cultural attitudes and practices impede women's use of services that are available.
- Children whose earliest years are faced by hunger or disease or whose minds are not stimulated by appropriate interaction with adults and their environment will experience grave and negative consequence throughout their lives-and so does society as they would be less contributory member.

Given the magnitude of these problems and the interventions available, much has not been done. Most of these problems are silent. They remain, to a large extent, uncounted and unreported. Maternal and child health programmes should focus on addressing these problems, clarifying policy and program alternatives and identifying cost-effective health-related

program interventions that are likely to reduce maternal and child morbidity and mortality.

These outlined issues do not only show the importance of MCH care to the health of mothers and children or their immediate problems. Rather, they show the role and necessity of MCH care in the welfare of the family, the community and the country as a whole. Thus, MCH care an issue that has to be addressed in terms of national productivity and futurity of a country.

The specific objectives of MCH Care focuses on the reduction of maternal, perinatal, infant and childhood mortality and morbidity and the promotion of reproductive health and the physical and psychosocial development of the child and adolescent within the family.

1.2 Objectives and Targets of WHO

1. To reduce maternal morbidity and mortality due to pregnancy and child birth
2. To reduce morbidity and mortality due to unsafe abortion
3. To reduce perinatal and neonatal morbidity and mortality
4. To promote reproductive health awareness for young children
5. To increase knowledge of reproductive biology and promote responsible behaviour of adolescents regarding contraception, safe sex and prevention of sexually transmitted infections.
6. To reduce the levels of unwanted pregnancies in all women of reproductive age.
7. To reduce the incidence and prevalence of sexually transmitted infections, in order to reduce the transmission of HIV infection.
8. To reduce the incidence and prevalence of cervical cancer
9. To reduce female genital mutilation and provide appropriate care for females who have already undergone genital mutilation
10. To reduce domestic and sexual violence and ensure proper management of the victims.

1.3 Objectives of the MCH program in Ethiopia

General Objective: To improve maternal and child health services in order to decrease maternal and childhood morbidity and mortality

Specific Objectives

- To provide primary health care services
- To extend integrated MCH services into the rural areas.
- To prevent malnutrition and infection among mothers and children through education in health and nutrition
- To promote the use of safe water, sanitation and immunisation
- To promote supply and promote effective FP programmes.
- To provide services at a cost commensurate with the financial, material and manpower resources of the country.
- To initiate, develop and co-ordinate operational and other relevant research in MCH.

1.4 Strategies of the MCH Programme

- The health services at all levels, including the CHS shall carry out integrated services. Health education programmes are to be included.
- The health services shall be continually expanded
- The skills and knowledge of the health personnel shall be constantly improved.
 - a. Adequate emphasis on MCH shall be ensured in the curricula of health workers.
 - b. An adequate number of health workers for the various levels shall be trained.
 - c. Textbooks, manuals and other reference materials will be distributed to all health institutions.
 - d. Knowledge shall be continuously upheld through appropriate training and supervisory activities.

- Revision and improvement of the referral system
- Co-ordinate with other organisations and institutions involved in activities related to MCH.
- To engage the participation of the agricultural extension workers and the Ethiopian Nutrition Institute in the promotion of the production and utilisation of supplementary feeding mixes.
- Promote community participation and involvement as an essential component of the MCH Programme.
- Seek resources for the expansion of services from the government and Non-Governmental Organisations.
- Manpower training and research should be carried out whenever necessary and feasible. Regions should develop their respective in service training capability and implement a training programme to develop and upgrade the skill and knowledge of the health workers.

1.5 Learning Objectives

- Understand the importance and role of MCH care
- Outline the objectives of the MCH programs
- Describe major health problems of mothers and children
- Identify the factors that affect the health of mothers and children
- Major causes of maternal mortality and prevention
- Recognize the available maternal and child health services
- Describe the role of these services in preventing maternal and child morbidity and mortality
- To be able to participate, organize, and manage MCH activities

CHAPTER TWO

Maternal Health Problems

2.1 Learning Objectives

- Understand the magnitude of maternal health problems
- Describe the factors that affect the health of mothers
- Describe maternal mortality
- Outline the major causes of maternal mortality
- Understand effects of maternal health on children, family and community

2.2 General Consideration

More than 150 million women become pregnant in developing countries each year and an estimated 500,000 of them die from pregnancy-related causes. Maternal health problems are also the causes for more than seven million pregnancies to result in stillbirths or infant deaths within the first week of life. Maternal death, of a woman in reproductive age, has a further impact by causing grave economic and social hardship for her family and community. Other than their health problems most women in the developing countries lack access to modern health care services and increases the magnitude of death from preventable problems.

2.3 Factors Affecting Health Status of Mothers

The major determinants of maternal morbidity and mortality include pregnancy, the development of pregnancy-related complications, including complications from abortion and, the management of pregnancy, delivery, and the postpartum period. However, a lot of factors contribute to the low health status of women in the developing countries including Ethiopia. These factors include:

- Socio economic development of the country has serious Impact on morbidity and mortality.
- Poor agricultural development results in inadequate household food and has direct influence on nutritional status of mothers.

Maternal death often has a number of interlined causes, which may start as early as birth or in early childhood. For example, a girl who is not fed properly during her early years will be stunted and therefore more likely to have obstructed labour. Also, a woman's risk of dying from infection and haemorrhage is increased considerably when being malnourished.

- *Poor sanitary environment, poor housing, unsafe and inadequate water, adverse social and physical environment.*
- *Access to health services.*

Lack of access to modern health care services has great impact on increasing maternal death. Most pregnant women do not receive antenatal care; deliver without the assistance of trained health workers etc. Less than 10% of women in Ethiopia and many countries of Africa & Asia get Family planning services.

- *Access to education*

In many countries women have poor education and 2/3 of illiterate adults are women. Poor education of women has to be given serious consideration. Because denial of education indicates that women are denied the role they can play in decision-making and decreases the extent of contribution to their lives, family and community. Education is proved to have significant effect on women's health and reproductive behaviour through its influence on age at marriage, contraception and health care use, and awareness of risks and danger signs.

- *Women's reproductive and health behaviour.*

Reproductive and health behaviour involves, for example, the age at which a woman becomes pregnant, whether the pregnancy is wanted, and what kind of health care the woman seeks.

- *Access to and control of income and resources*

Women's income, access to household resources, and power to make decisions influence their ability to seek and utilize health services.

- *Political commitment*

Political commitment is crucial to allocate the available resources and to provide services which are accessible to those most in need.

- *Low social status of women*

The health and well being of women is related and highly influenced with their social status.

“Poor, Powerless, Pregnant” This is the status of women as labelled by a global survey in 1988.

Large number of women (about 50%) and girls in the world live under conditions that threaten their health, deny them a choice about child bearing, limit their educational attainment, restrict their economic participation and fail to guarantee them equal rights as compared to men.

Low social status leads to sever burden & over work (Conjugal, maternal, domestic, and professional) exposing to physically demanding activities.

Although all factors in the framework are likely to influence maternal morbidity and mortality as well as the health all women (and newborns), some have greater impact in the short term, particularly on the incidence of maternal death.

It is always important to address the above-mentioned factors, as women need to be physically, mentally & socially healthy to fulfil

their reproductive duty safely and efficiently and to be a contributing member of their community.

Some indicators of health status of women in Ethiopia

- Maternal mortality rate: 500 – 700 per 100,000
- Malnutrition among women in reproductive age group: 17%
- Total fertility rate: 6.2
- Teen-age pregnancy: 20%
- Low birth weight deliveries: 17%
- Weight gains during pregnancy: 5-6 KGs
- Ante natal care utilization: 20%
- Deliveries assisted by trained health worker: 14%
- Family planning coverage less than 10%

2.2 Maternal Mortality

2.2.1 General Consideration

Maternal mortality is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the site and duration of pregnancy from any acutely related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal mortality is the leading cause of death among women of reproductive age in most of the developing world. Globally, an estimated 500,000 women die as a result of pregnancy each year. It is the statistical indicator, which shows the greatest disparity between developed, and developing countries.

Maternal mortality in developing countries is given least attention, despite the, fact that almost all of the suffering and death is preventable with proper management.

Maternal mortality constitutes a small part of the larger maternal morbidity and suffering, because for every maternal death there are a lot of women suffering from acute and chronic illnesses during pregnancy, delivery and 6 weeks after.

Most of the deaths, 99%, are in developing countries the magnitude of maternal death is very high in Sub-Saharan Africa and South Asia, where material mortality ratios (material deaths per 100,000 live births) may be as much as 200 times higher than those in industrial countries. **This is widest disparity in human development indicators yet reported.**

This difference is further expressed when comparing lifetime risk of women: one in every 21 women in Africa dies of complications of pregnancy, delivery, or abortion, while with only one in every 10,000 in Northern Europe. The maternal mortality rate in Western Europe, a century ago, was less than most developing countries including Ethiopia.

Poverty, though not a disease in biological sense, it affects maternal health adversely and is reflected by maternal death. The difference in maternal mortality between developed and developing countries strengthen the above fact.

The risk of maternal mortality is also related to the mother's previous health and nutritional status, issues of gender discrimination, and access to health services. Adolescent pregnancy carries a higher risk due to the danger of incomplete development of the pelvis, and there is a higher prevalence of hypertensive disorders among young mothers. Frequent pregnancies also carry a higher risk of maternal and infant death. Concern for maternal mortality is not only for the mother's life. It is related to:

- The health and deaths of the seven million newborns who die annually as a result of material health problems and
- The health and socio-economic impact on children, families, and communities.

Table1 Selected Measures of Maternal mortality, Total fertility rate and life time risk of maternal death by Region and Subregion

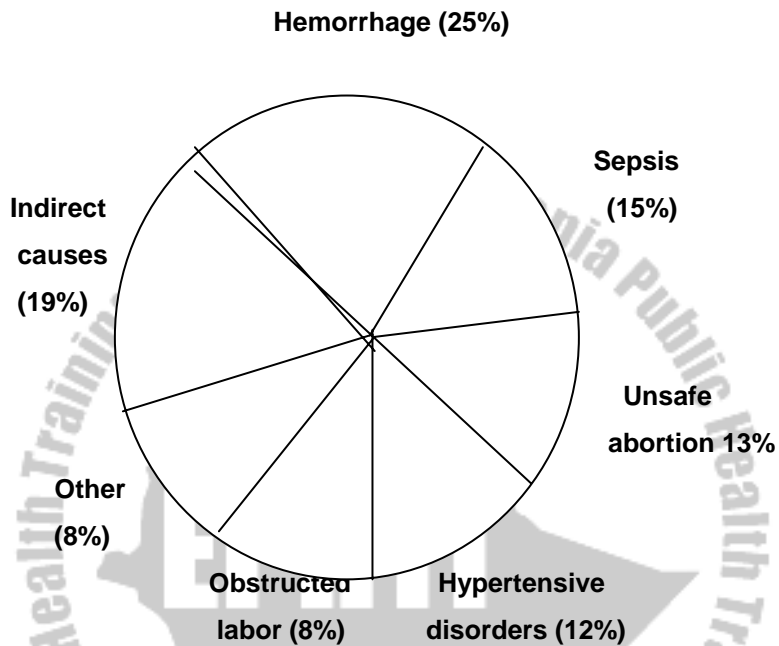
Region/ subregion	Maternal Mortality ratio, (per100,000 live births)	Total fertility rate,1991	Lifetime risk of maternal death
World	370	3.4	1 in 67
Industrial countries	26	1.9	1 in 1,687
Developing countries	420	3.9	1 in 51
Africa	630	6.1	1 in 22
North	360	5.0	1 in 47
East	680	6.8	1 in 18
Middle	710	6.0	1 in 20
West	760	6.4	1 in 18
South	270	4.6	1 in 68
Asia	380	3.9	1 in 57
East	120	2.2	1 in 316
Southeast	340	3.4	1 in 72
South	570	4.4	1 in 34
West	280	4.9	1 in 61
South America	220	3.3	1 in 115
North America	12	2.6	1 in 2671
Europe	23	1.7	1 in 2,132
Oceania	600	2.6	1 in 54
Commonwealth of Independent States	45	2.3	1 in 805

2.2.2 Major Causes of Maternal Mortality

There are five major causes of maternal mortality, especially in the developing countries. These are

- Haemorrhage

- Infection
- Hypertensive disorders of pregnancy
- Obstructed labour
- Abortion



2.2.2.1 Haemorrhage

It can occur during pregnancy, delivery and post partum period.

During pregnancy it can occur at the

- 1st trimester due to abortion
- 2nd trimester due to placental location and pre term labour
- 3rd trimester due to abnormal placental location, premature separation of placenta, and premature labour

During delivery due to

- Uterine or placental bleeding
- Traumatic damage to Vagina or cervix

During post partum period due to

- Non-involution of the uterus

Haemorrhage is more common among multiparous women, following

- Unsafe abortion
- In cases of antepartum haemorrhage
- Prolonged labour
- Retained placenta and it is also common among women with a history of problems in delivering the placenta.

As stated before largely most problems are preventable. This point is very Convincing when one sees the major predisposing factors for both ante partum and post partum haemorrhage

Predisposing cause for Ante partum haemorrhage

- Placenta praevia
- Common in multiparity
- Increases with age
- Scarred uterus
- Multiple pregnancy

Predisposing cause for abruptio placenta

- Common in patients with hypertension
- Trauma
- Injuries to abdomen
- Excessively hard work
- Emotional trauma

Predisposing cause for Post partum haemorrhage

- Atonic uterus
- History of post partum haemorrhage, increased chance for recurrence
- High parity
- Multiple pregnancy
- Anaemia – causing poor contraction
- Prolonged labour
- Trauma – this can show quality of care

Most primary postpartum haemorrhage results either from failure of the uterus to contract and remain contracted or from retained placenta (partial or complete). WHO has recommended that midwives be trained to perform manual removal of the placenta, because the results in terms of blood loss, infection and mortality are best when this is done within an hour of delivery.

As the predisposing cause show virtually all are preventable with proper and regular antenatal care followed by proper management during delivery and soon after.

2.2.2.2 Infection

Infection is prevalent among the disadvantaged and risk increases by factors like anaemia, malaria, goitre, and malnutrition. Maternal infection is a serious problem as a result of the vicious cycle caused by low caloric intake, heavy workload and infection.

It is also compounded by pregnancies at young age and too many pregnancies too close together.

Poverty also perpetuates the problem through illiteracy, poor sanitation, inadequate housing (crowding), and Inadequate and unsafe water.

a. Puerperal Sepsis

Puerperal sepsis occurs following long and complicated deliveries and it is rare in uncomplicated spontaneous delivery. Sepsis is also very common after unsafe abortion. Usually sepsis is fatal when the mother's condition is compromised due to difficult labour and severe bleeding.

Important factors that are related with and increase the risk are:

- Majority deliver at home and expose to poor sterile procedure
- Assistance by Untrained person during delivery
- Vaginal examination with unclean hands during delivery and number of vaginal examination

- Prolonged labour (the larger it lasts the greater the risk)
- Duration of ruptured membrane before delivery (increase chance of the liquor to become infected)
- Use of Instruments to assist delivery
- Trauma
- Caesarean section specially in ruptured uterus
- Pre-existing genital and reproductive tract infections
- Those who survive infection face increased risk of
- Pelvic inflammatory disease
- Infertility, and
- Ectopic pregnancy

Effective strategies to prevent sepsis include:

- Improvement in standards of hygiene in routine care.
- Keeping interventions and vaginal examinations to a minimum
- Provision of “clean delivery” for all women. Basic aseptic technique is simple in facilities with adequate supplies of water, soap and disinfectant.

One of the primary aims of trained birth attendant training programs throughout the developing world is to promote clean delivery in the home through deduction and provision of basic supplies such as: sterile razor blades and washable plastic sheets.

It is, however, difficult to ensure cleanliness in all deliveries, particularly where access to clean water is limited.

- Referring women with pre-term prolonged rupture of membranes (longer than 12 hours) to a referral-level facility for assessment.
- Use of prophylactic antibiotics following pre-labour rupture of membranes (longer than 12 hours).
- Transferring women with prolonged labour (longer than 12 hours) to a referral- level facility.
- Evacuating retained placental fragments promptly.

- Early detection and timely use of antibiotics for postpartum sepsis reduces the risk of mortality or long-term sequelae.

Therefore, educating trained birth attendants, women, their families, and community health workers to recognize the early signs of sepsis and seek medical care may be lifesaving. Scheduling timely postpartum visits may also be useful. Postpartum care to detect infection is as important for those who deliver in institutions as it for those who deliver at home. Women in hospitals are often discharged within less than two days, so that the first signs of infection may only appear after they have left.

b. Malaria

Malaria is cause of severe under weight during birth and 3 million infants are affected in Africa. It is common at first pregnancy.

During pregnancy the risk of getting malaria increases two times and the risk for cerebral malaria is high. During pregnancy malaria is also the cause of

- Severe anaemia
- Spontaneous abortion
- Pre mature labour
- Still birth, and
- Low birth weight

Wherever malaria is common pregnant women should take anti malarial tablets throughout pregnancy.

Anaemic women due to malaria face

- Risk during child bearing
- Less tolerance to blood loss (bleeding)
- Risk for anaesthesia and operative delivery
- Poor pregnancy outcome
- Bleeding, illness, and death during delivery

- Still birth
- Poor foetal growth
- Pre term labour
- Low birth weight (serious effect on infancy)

When anaemia is severe pregnant mothers face (directly) congestive heart failure and haemorrhage (indirectly). This can happen in 3-9% of pregnant mothers. In moderate cases of anaemia there will be poor ability to recover from haemorrhage and infection

c. Hepatitis

Hepatitis A is related with socio economic status and usually women of low socio economic status (SES) are susceptible as a result of poor hygienic conditions. Faecal contamination of food & water are responsible as the mode of transmission.

Incidence during pregnancy increases two times and pregnant are more seriously ill and likely to die than non-pregnant women. In Ethiopia it is reported as one of the major causes of maternal death due to infectious diseases. Premature labour, liver failure, and severe haemorrhage are common complications of severe hepatitis.

d. Sexually Transmitted Diseases and Pelvic Infections

Sexually transmitted diseases and pelvic infections have grave consequence on mother and child. They can result from

- Sexual activity
- Poor obstetric and gynaecological practices specially associated with Induced abortion, spontaneous abortion and childbirth

Fatality depends on the type of organism and the organs affected.

Its effects and complications include:

- Tubal scarring leading to infertility
- Ectopic pregnancy

- Spontaneous abortion
- Pre mature rupture of membrane
- Congenital anomalies such as blindness, and mental retardation etc.

e. Acquired Immuno Deficiency Syndrome (AIDS)

The spread of AIDS is increasing and rapid specially in sub-Saharan Africa and other developing countries putting stress on the already strained health care system.

Magnitude

According to the WHO estimate 16,000 people are infected every day and there are 3 million infected women and it is becoming a serious threat and alarmingly increasing in pregnancy. In countries like Rwanda 18.30% of women who came for Ante Natal Care were found to be HIV positive in a routine screening. This condition is further aggravated as a woman with AIDS has a 25-40% chance of passing on HIV in the womb or at birth (the number of children born with HIV is reported to be 3.8 million).

The Ministry of Health reported that chance, of transmitting in the uterus, for an Ethiopian woman is 35%.

With the current state of spread and infection rate, in few years time, AIDS is expected to be the major cause of maternal mortality.

Poverty is also related with AIDS and as a cause of death. Some of the reasons are:

- Poor health care
- Poor availability of drugs for protection of immunity and increasing survival Immunity
- Crowding (increases transmission)
- Malnutrition further lowers immunity for common diseases like water borne infections etc.

The following statement clearly reflects the current state of poverty in the developing countries and their inability to combat AIDS.

If the cure for AIDS were a single glass of clean water most of the HIV positive people in Africa would still be dead.

Prevention

- There is an urgent need for increased understanding of magnitude of the epidemic and its local and global dimension.
- Promotion of action & sound policy at a national level is mandatory to prevent transmission and to focus on children, family, and community
- Intervention must give emphasis on Health Education importance is well proved in countries like Thailand and Uganda
- Health education at all levels and due attention to address specific problems such as religious and cultural issues (e.g. where people can't speak of condom, and sexuality).
- Promote abstinence before marriage or faithfulness to one partner
- Screen blood
- Reduce mother to child transmission

2.2.2.3 Obstructed Labour

1. General Consideration

Obstructed labour occurs when there is no advance of the presenting part despite good uterine contraction. Teenage pregnancy is a serious risk factor and mostly occurs in first delivery. Thus it is mainly the problem of early adolescent pregnancy.

Between 1 and 13 percent of pregnant women suffer prolonged or obstructed labour, though the level of obstructed labour varies by country. Obstructed labour can result not only in maternal death, but also in fetal death due to infection, birth injury, or asphyxia.

Operative delivery to relieve obstructed labour is one of the recognized essential obstetric functions, which should be available at the first-referral level hospital to which women are referred in emergencies. Lack of access to timely operative delivery for women in developing countries, most of who deliver in homes, which may be far from any health facility, leads to any preventable deaths.

Strategies to overcome these problems include:

- Prenatal risk screening and
- Early detection and referral of women for whom labour is not progressing at a normal rate.

Prevention of obstructed labour due to abnormal lie might be possible through detection of transverse or oblique lie and external cephalic version at term.

Prolonged labour is not always due to cephalo-pelvic disproportion and does not inevitably end in obstructed labour. However, whatever its cause, prolonged labour is also associated with increased risk of postpartum haemorrhage and infection and long-term sequelae such as vesico-vaginal fistula, indicating a need for referral for higher-level care.

Use of the partograph to monitor the progress of labour has been shown to be effective in detecting prolonged labour and improving decision-making. The partograph enables health staff to assess the progress of labour by tracking cervical dilation against the passage of time. Cervical assessment is recommended on a four hourly basis. Use of the partograph by midwives in peripheral unit's facilities early transfer. In referral hospitals, it assists decision making for operative delivery or other interventions, and improves communication.

The causes can be related to problems due to the mother (such as malnourished girls who grew up stunted may have small pelvis), the presenting part or the foetus. Health workers in Antenatal clinics has to

be alert as most of the patients are very young, short-statured. primipara coming from rural areas where health services are scarce.

2. Problems of Fistula

One of the worst consequences of childbirth vesico-vaginal fistula (VVF) or holes that develop between the vagina and urinary tract and/or rectum. VVF is commonly due to obstructed labour, which is most common among women

- Who are stunted due to chronic malnutrition or untreated infections in childhood and adolescence, or
- Among women experiencing their first pregnancy at a young age, prior to complete pelvic growth.

Women who suffer VVF continuously leak urine, and sometimes feces. They typically become social outcasts; divorced and rejected, they often travel long distances in search of treatment. The prevalence is particularly high in sub-Saharan Africa.

In Ethiopia, the Fistula hospital has done 15,000 repairs in about 25 years.

In India, the numbers are decreasing with the development of peripheral maternity services and improved communications. Community awareness and support for transfer of women in prolonged labour is crucial in decreasing the prevalence of obstructed labour.

Serious problems are encountered by most women after developing fistula. The problems range from rejection by husbands, and ostracised by their community for life if untreated to self-loathing

2.2.2.4. Hypertensive Disorders of Pregnancy (Toxaemia of Pregnancy)

These include eclampsia and pre-eclampsia, which are occurring only during pregnancy (after 20 weeks gestation) as a result of pregnancy-

induced hypertension.

Early stage pre-eclampsia, characterized by high blood pressure, generalized edema (swelling), and excess protein in the urine, may arise in the second or third trimester and is most common among primiparas. Eclampsia is characterized by very high blood pressure, convulsions, and possible cerebral haemorrhage. Untreated pre-eclampsia leads to eclampsia in less than 1 percent of pregnant women, but the condition is serious and the outcome poor. Immediate transfer and treatment, including expedited delivery, are required.

Between 5 and 17 percent of eclampsia victims die, and those who survive may suffer paralysis, blindness, or chronic hypertension and kidney damage.

Eclampsia can happen at any time during the latter part of pregnancy, it can and often does result in fetal death or the birth of a premature infant at high risk of death. Hypertension and pre-eclampsia can also result in low-birth-weight infants or fetal death.

The detection and management of hypertensive disorders of pregnancy depend on a continuum of services from prenatal care through routine and emergency care around the time delivery.

Much of the reduction in fatalities in industrialized countries may be attributed to improved medical support for the critically ill patient and the increased use, effectiveness and safety of methods of expediting delivery, including induction of labour and operative delivery.

The most basic requirement for adequate attention to hypertension in pregnancy is blood pressure monitoring by trained personnel during prenatal care. The serial measurement of blood pressure is not always simple, but it is an important measurement. Training of health care providers to take blood pressure measurements in a reliable, unbiased fashion can be difficult. In-service training to maintain accuracy in

recording measurements and intelligent interpretation of results and subsequent diagnosis are important factors in the prevention of eclampsia.

In addition, community education should be conducted to improve knowledge of the danger signs of severe pre-eclampsia and the importance of seeking care immediately in the case of convulsions. Where blood pressure screening is not possible, use of other indicators for referral should be explored. For example, urine dipsticks can be used to screen for protein urea, and indicator of pre-eclampsia. Pre-eclampsia, if it is not treated and recognised early it can prognoses to eclampsia, the severe form.

Hypertensive disorders of pregnancy can be superimposed on essential hypertension and are common

- In primigravida - specially teenage mothers and in women over 35 years
- During multiple pregnancies
- When there is a new partner

Conditions that increases the rate of maternal death due to unrecognised toxemia include:

- Low socio economic status
- Lack of public health care
- Lack of prenatal care etc.

2.2.2.5. Abortion

A. General Consideration

Abortion Is termination of pregnancy before the foetus is capable of extra uterine life.

Depending on the cause abortion is classified

1. Spontaneous abortion (commonly known as miscarriage) which is unprovoked termination of pregnancy

2. Induced abortion due to deliberate interference. It can be performed either
 - a) In accordance with legal sanctions
 - b) Out side of the law
 3. Therapeutic abortion, which is performed exclusively for medical reasons specially when
 - a) Danger to mother's health is high if pregnancy continues
 - b) If foetus is threatened with congenital and genetic abnormalities
- Induced abortion is one of the leading public health problems in all regions. It has adverse clinical, economical, and psychosocial effects profoundly in developing countries. It is also the leading cause of maternal mortality ranging from 15-50% in different countries

Like all health cares, abortion care is subject to regulations in the health code of any country.

B. Categories of abortion care

- a) Emergency abortion care
- b) Elective abortion care

Elective Abortion Care

The circumstances of performing elective abortion care have significant differences among countries.

- 40% Of the world population live in countries where induced abortion is permitted on request of the woman. Many countries have gestational age limits.
- 23% of the world population live in countries where socio- medical factors may be considered as indicators for induced abortion or where adverse social conditions alone can justify termination of pregnancy

- 12% of the world population live in countries where broad medical conditions such as a threat to the woman's health or foetal conditions justify termination of Pregnancy.
- 25% population live in countries where induced abortion is prohibited except to save the life of the pregnant woman or without explicit exception.

C. *Unsafe Abortion*

A pregnancy terminated by untrained and unskilled persons. It increases risk of death 250 times and its complication is a major direct cause of death among women in reproductive age group. Whatever the type of abortion (spontaneous or induced abortion) the events and the care received determine whether the abortion is safe or unsafe.

Even though spontaneous abortion can occur in 10-15% of known or suspected pregnancies, it is less fatal than unsafely induced abortion.

Why?

Because usually mothers tend to go to a health institution for spontaneous abortion.

D. *Factors Leading to Unsafe Abortion*

Demographic risk factors

- Age is an important determinant whether a pregnancy be unwanted & therefore aborted, for choice of abortion and extent of the resulting clinical manifestations

In Africa complications are seen among young, unmarried girls, students, and dropouts usually as a result of Ignorance, fear, that lead to denying pregnancy symptoms until they become unmistakable. As a result pregnancy advances and leads to complicated abortion

In many developing countries, for young boys and girls there is less access to relevant information about reproductive health and less or no access to contraception

- High Parity. This can be related to economic problems.

But high parity women have better clinical outcomes **Why?**

Because they seek appropriate outlet and go at early gestational age in contrast to low parity mothers

Contraceptive failure / access to FP

Socio-economic & cultural risk factors

Women seek abortion when pregnancy occurs in circumstance such as severe hardship, insufficient income or intense socio economic deprivation.

Culture and Religion

Myths & taboos prevent using contraception or value fertility. Many cultures in Africa disapprove contraception for single & unmarried women.

Lonely women such as widows, separated are expected to remain celibate, and pregnancy is regarded as a major violation of traditional norms.

(But no effective cultural mechanism to disengage from indulging in pre marital sex)

High-risk groups for complicated abortion commonly are adolescents.

This is supported by many studies in different countries. In Kenya 79% unmarried women in one study had history of complicated abortion and among these 60% were schoolgirls or unemployed and 43% were found to be adolescents. Similarly in Nigeria among the 60% single women who had history of complicated abortion 50% of them were students.

However, many studies also showed women of all ages and walks of life use induced abortion.

F. Strategies to Combat Abortion Related Morbidity & Mortality

- Improving family planning services bring dramatic change
By increasing CPR Chile and Mexico decreased abortion related mortality to 42 from 118/100,000 and by 50% respectively.
- Education and counselling helps to decrease unwanted children.

Unwanted pregnancy - causes psychosocial problems even when pregnancy is terminated. It can cause rejection of Infant, baby battering, baby dumping & infanticide.

(Un wanted pregnancy could be caused due to failed contraceptive)

- Family life Education (even during abortion procedure)
 - a) Adolescent
Access to information is very minimal for adolescents due to illiteracy and taboos which make it difficult to talk about sex with parents (even parents are the least informed in many circumstances). Sex education in the curricula and such an intervention needs the co-operation of all concerned
 - b) Married women: – to increase control on their reproductive role.
 - c) Single mothers:- as this group faces the worst consequence of law status of women in addition to having children with no job or support
 - Counselling regarding termination of pregnancy
- a) With married women about gestational age and
 - b) In the case of adolescent pregnancy with parents or relatives
 - Contraception and follow up after abortion both for induced & spontaneous.

- Changes in abortion laws. Developing countries with the exception of China, Cuba, Vietnam, India and Singapore has restrictive laws

In Africa 7 countries permit for reasons other than danger to a mother's life.

Zambia, Tunisia, Mozambique permit on socio-economic grounds.

2.2.2.6. Female Genital Mutilation (Female Circumcision)

A. General Consideration

Female circumcision or female genital mutilation (high acceptance for this name) is one of the serious causes of maternal morbidity and mortality.

Female genital mutilation (**FGM**) is carried out as cultural and religions requirement to ensure chastity until marriage or to initiate a girl in to a women's life.

FGM is practiced in 27 countries in Africa .WHO estimated that, approximately 85 – 114 million women and girls have been subjected to FGM and in Africa alone in the 1990's FGM was conducted on 100 million women. Reports in the late 90's also showed the number of women subjected to FGM is very high. The prevalence varies for different countries, such as

- In Somalia 100%,
- In Egypt 94%(reported in 1998)
- In Sudan 80%.
- In Uganda and Congo 5- 10%
- In Ethiopia – Among both Christians and Moslems and no region is spared.

Estimated figure is 80-90%

B. Types of FGM

1. Sunna is the mildest form of FGM

Removal of the hood or the fold of the skin over the clitoris or the excision of the clitoral prepuce only.

2. Excision (modified circumcision)

Removing the entire clitoris part of or inner labia minora

- Scarring breaks during delivery and haemorrhage is severe. It is practised in the Christian highlands

3. Radical circumcision or Infibulation

Removal of clitoris, labia minora and part of L. Majora.

Raw sides of the vulva are either stitched or pinned together and the thigh and legs are tied together to seal the organ. Only a pea sized hole is left for urination and menstrual flow.

I.e. Closing Labia and result in blocking the birth canal, which causes obstructed labour

It is practised all along the Red sea coast Afar, Somali and, Djibouti

Reduction of FGM is a top priority of the policy. Because practising FGM is a gross violation of human rights!

C. problems associated with fgm

- Pain - during FGM and marriage
- Emotional scar on her sexuality
- Rejection for marriage
- Infection (Tetanus, HIV/AIDS etc)
- Haemorrhage, acute anaemia
- Retention of urine
- Injury to urethra, anus, rectum and vaginal wall
- Chronic pelvic sepsis leading to infertility
- Mutilation during marriage when failed to penetrate the choice is to mutilate to gain access.

- During delivery upward episiotomy to divide the labia.
- Morbidity days of hospitalisation are very high

2.3 Assaignment and Group Discussion

1. Past nutritional deficiency is an important factor for obstructed labour? Why?
2. Maternal mortality shows greater disparity between developed and non-developed countries than most other health indicators. What do you think is the cause of such a disparity?
3. Maternal mortality in developing countries shows the extent of equity and social justice. It also reflects the ecology of poverty. What does these concepts reflect.
4. AIDS affects both rich and poor. But the deprived poor woman has less ability to protect herself against HIV Infection. What does this mean?
5. In developed countries the rate of trans placental transmission is very low and fast decreasing. Why?
6. AIDS also may lead to doubling of maternal mortality. Explain this suggesstion.
7. Women are at a disadvantage in situations from childhood through adult life and many of which have direct health implications. Why?

CHAPTER THREE

Maternal Health Services

3.1. Learning Objectives

- Identify the health services available for mothers
- Describe the objectives of FP, ANC, Delivery, PNC
- Understand the role of FP, ANC, Delivery, PNC in preventing MMR, IMR, and CMR
- Understand the role of FP, ANC, Delivery, PNC, on the health of mothers and children
- Explain the effective methods of delivering maternal health services
- Identify the problems related to delivery of maternal health service delivery
- Identify the problems related to utilization of maternal health service delivery
- Identify the role of TTBA and CHWs in the delivery of maternal health services

3.2 General Consideration

For most women in the developing world the lack of regular access to modern health services greatly contributes to the increased morbidity and mortality. Most mothers receive insufficient family planning advice and ante natal care or none at all and deliver without access to skilled obstetrical care when complications develop. Even in countries with relatively well-developed health systems, preventable maternal illness and death persist because of inadequate management of the complications of pregnancy.

Based on the above issues the important and major purposes of provision of Maternal Health Services are:

- Prevention of maternal morbidity and mortality
- Recognition and treatment of complications as they arise, and
- The promotion of the health of the mother and the newborn.

3.3. Family Planning Services

3.3.1. General Consideration

Family Planning is a means of:

- Promoting the health of women and families and part of a strategy to reduce the high MMR, IMR, and CMR.
 - Preventing maternal mortality by reducing exposure to pregnancy and therefore to risks associated with pregnancy and childbirth in the event of wanted births
 - Preventing pregnancy and abortion when pregnancy is unwanted.
- Based on the above factors family planning programmes can be taken as the means to offer the service, to all who desire it, the opportunity to determine when to have children, the number of their children and spacing of births.

Accordingly Information about FP should be made available in order to promote access to FP services to all individuals desiring them. Many reports indicate that contraceptive prevalence often rises among older, higher parity women, or those at greatest risk of abortion. There is also a high prevalence in contraceptive use among more educated, urban women with better access to services.

Even though family planning programs have raised awareness and contraceptive use throughout the developing world, there is considerable unmet need for contraception. In many of developing countries it was found that between 10 - 40 percent of married women of reproductive age want to avoid a birth but are not using any type of contraceptive methods.

3.3.2. Objectives, Strategies and Service Modalities of FP (Ethiopia)

The objectives are to

- Limit the size of a family
- Adequately space children
- Decrease maternal and child morbidity and mortality due to unwanted pregnancies
- Help infertile couples to have children

In Ethiopia, as part of family planning service strategies, all health institutions (rural, urban, government and, private) are expected to provide family planning services.

The delivery modalities which the Ministry of Health is using are:

- Community Based Distribution Services (CBD)
- Facility Based
- Work based services
- Outreach Services
- Social marketing

3.3.3 Eligibility

Family planning services for whom?

Any person male or female who can conceive or cause conception regardless of age or marital status is eligible for family planning services including family planning counselling and advice.

3.3.4. Justifications for the Provision of FP Services

- Decrease fertility rate, population growth
- Reduce maternal deaths by spacing or preventing pregnancy. It is reported to bring 20% reduction in maternal deaths
- Reduce too early, too late, too close too many pregnancies
- Reducing risk of unwanted pregnancies and illicit abortion

- Brings Immense benefits to children. It helps to avoid closely spaced, frequently ill children, LBW new borns, and, slow growth of children
- Improve family welfare
- Increase sustainable growth and decrease dependency ratio
- Help infertile couple

3.3.5. Types of Family Planning Methods

Natural methods

- Breast feeding as a contraceptive
- Abstinence
- Withdrawal (Coitus interrupts)
- Periodic abstinence methods or safe days

Technical methods

- Hormonal methods
- Mechanical and chemical methods
- Post coital contraception

Permanent contraception

- Female sterilisation
- Male sterilisation

Family planning choices are often the first element of primary health care that can be made available in a resource poor setting. Provision of basic non-clinical contraceptives requires minimal skill and can be handled by community-based providers with appropriate training.

The risk/benefit ratio of using methods such as oral contraceptives is in favour of nearly all women in such a setting, and a variety of cost-effective, distribution systems can be set up, from social marketing to community-based distribution programs focused on vulnerable groups.

Methods vary in their clinical effectiveness, and couples vary in the degree to which they make proper use of them. There has been a gradual shift toward more effective and more long-term methods, especially sterilization. Worldwide, female sterilization is the leading method and now accounts for about half of all contraceptive use, but regional comparisons show substantial variations in method acceptance. The most popular method in China is the IUD; in Northern Africa, the pill; and in Latin America, female sterilization. Traditional methods account for over 10 percent of users

Although contraceptive methods are not without risk, the risks tend to be small, balanced by some health benefits, considerably outweighed by the risks of pregnancy and childbirth, and dwarfed by the risks of unsafe abortion. The health benefits and risks of each method vary by the individual circumstances and the medical condition of the user; careful counselling of users by family planning providers can further reduce the risks. The IUD, for example, is associated with pelvic inflammatory disease, mainly in women who are at risk of developing sexually transmitted diseases. Barrier methods are not as effective as some other methods in preventing pregnancy, but they have an important non-contraceptive benefit by protecting against HIV infection and sexually transmitted diseases.

Factors important when discussing and selecting contraceptive method include:

- Effectiveness - success if used regularly
- Acceptability - easy to use
- Interference with sexual activity
- Availability - easy to get for continual use
- Side effects- problems and significance
- Reversibility - How easy to conceive again

Couples have to select the method that is best for them!!

Success depends on all the factors and always, if possible, discuss with both couples.

3.3.6. Factors for Effective Family Planning Programs:

- There must be access to services.
- Services must be provided in both public and private health facilities and through community-based distribution networks.
- There must be contraceptive diversity to meet varying family planning needs throughout the life cycle and for both women and men
- Counselling must be offered by health care providers trained to respect clients concerns and sensibilities.
- Strategic management must take into account contraceptive demand, public and political support, the service delivery infrastructure and the logistical supply system.
- Collaboration with the private sector can be an effective means of reaching many more people. And,
- Effective information, education and communication is essential.

Always remember that

- Contraceptive use has no direct effect on the risk of death once pregnant; therefore, if all women were equally likely to adopt effective methods of contraception, irrespective of age, parity, and other determinants of obstetric risk, increasing contraceptive prevalence would not change the risk of death once pregnant.
- A decline in fertility also means that first births, which are riskier, will increase as a proportion of all births. This means that increasing contraceptive prevalence could, in theory, actually lead to an increase in the maternal mortality ratio, even though the maternal mortality rate and lifetime risk of maternal mortality decline.

- Abortion is the major cause of death among reproductive age women in many developing countries. The fact that women do resort to primitive abortion, even knowing it to be unsafe, is evidence of their strong desire to prevent unwanted, unplanned births. Women known to have had abortions are therefore likely to accept contraception, and should be targeted in family planning efforts. On-site delivery of post-abortion family planning, including the provision of initial counselling and contraceptive methods following abortion, is essential.

In General

Family planning increases the standard of Health and Quality of Life!!!

It is cost effective more than many other health and social interventions!!!

3.3.7. Assignment and Group Discussion

1. Who is benefiting from the provision of Family Planning Services?
2. In Ethiopia contraceptive prevalence rate is less than 10%. What do you think are the reasons for this under utilisation?
3. What do you suggest to increase the contraceptive prevalence rate In Ethiopia?
- 4, What is the role of counselling in family planning?

3.4 Antenatal Care Service

3.4.1. General Consideration

Ante Natal Care (ANC) is the care given to pregnant mothers that they have safe pregnancy and healthy baby. It also helps in minimising complications of pregnancy, labour the post partum and neonatal periods.

The purpose of ANC is to care for pregnant mothers and to have all births attended by trained health workers, and to identify pregnancies where risk is high and provide special care for the mother and the infant. There is a large body of evidence from routine statistics and special studies to suggest that women who have received prenatal care experience lower rates of maternal mortality.

Components of prenatal care should include haemoglobin measurement and correction of anaemia, blood pressure measurement (to help detect hypertensive disorders of pregnancy), and the diagnosis and treatment of reproductive tract infections (especially sexually transmitted diseases) and urinary tract infections. Depending on local prevalence levels, it may also be necessary to prevent, screen for, and treat malaria and other infectious or parasitic diseases. Immunization against tetanus, which has benefits for both mother and infant, is an essential component of prenatal care throughout the developing world.

Ante natal care can also play a role in identifying danger signs or predicting complications around delivery by screening for risk factors and arranging for appropriate delivery care when indicated. Risk assessment has proven most useful in the prediction of obstructed or prolonged labour based on height and previous poor obstetric history (for example, caesarean section, still birth). A history of previous postpartum haemorrhage or retained placenta may be indicative of a woman at risk of postpartum haemorrhage.

Mothers have to be encouraged to register for ANC as soon as they know they are pregnant.

3.4.2. Activities During the First Ante Natal Care Visit

- Diagnose pregnancy
- History taking
- Physical Examination

- Laboratory Examination. Haemoglobin measurement. VDRL test for syphilis is one of the important tests to be done irrespective of any condition provided that the facilities are available. Because syphilis has a grave impact on the foetus then on the new born.
- Immunisation: give Tetanus Toxoid injection. If first time repeat after one month.

Protection: 2 doses of tetanus toxoid protect for 3 years, 3 doses for 5 years, 4 doses for 10 years and 5 doses for life.

- Treat anaemia
- Treat syphilis and other problems accordingly

3.4.3. Second and Following ANC Visits

- Measure blood pressure
- Measure the symphysis fundal height
- Tetanus Toxoid and other examinations as indicated

3.4.4. Health and Nutrition Education During ANC

Health and nutrition education during ANC must focus on:

- Pregnancy: foetal movement (specially for primigravida), labour and common problems
- Diet and Nutrition: extra food, weight gains, fasting and rest
- Avoiding alcohol, tobacco, and drugs (specially in the first trimester)
- Personal hygiene
- Delivery preparation
- Labour signs
- Breast-feeding
- Newborn care
- Family planning
- Traditional beliefs and practices

3.4.5. Weight Gain During Pregnancy

Pre-pregnancy weight and weight gain in pregnancy are both critical and additive in their effect on pregnancy outcome. Equal emphasis should be given to assuring that both are normal.

A pregnant mother has to have weight measurement a month apart, anytime during the second or third trimester. A gain of less than one kg per month is the danger signal, with no weight gain or weight loss being even more severe and calling for immediate action, such as food supplementation directly for the woman.

Mothers should be weighed and counselled at the available opportunity present either during prenatal care or when they bring their children for immunization or growth monitoring,

Arm circumference is the most feasible measurement to implement. The same cut-off point can be used to identify undernutrition in or out of pregnancy and ranges from 21-23.5cm depending on the country or region. Because of the simplicity of arm circumference technology. Which requires only an inexpensive tape, women can measure each other in their own homes.

3.4.6. Risk Approach in Maternal Care

Risk approach is a managerial tool for health services to identify people at risk as early as possible and intervene in order to reduce the risk.

- What is the basic concept behind this approach?

All women in reproductive age group are vulnerable to disease, death and disability. However, all women are not equally vulnerable and this approach helps to identify mothers who are at a higher risk than others with a lesser risk.

Purpose

The main objective of the at – risk approach is the optimal use of existing resources for the benefit of the majority .It attempt to ensure a minimum

of care for all while providing guidelines for the diversion of limited resources to those who most need them. That means

- To care for all but to pay special attention to those in greatest need.
- The diversion of limited resources to those who most need them.
- Detection of risk factors requires
- Knowledge of the characteristics associated with poor outcomes and
- The ability to recognise and measure them.

Criteria to identify high risk women

Identification of high- risk women can be based on two classifications

1. Relationships between the risk factor and adverse out come
 - Causative or triggering - maternal malnutrition, LBW, placenta previa, congenital malformation
 - Contributory - grand multiparty can lead to transverse lie, Prolapse of the cord
 - Predictive or associative - previous foetal loss
2. Biological, medical, social condition
 - Biological - Age, birth interval, weight gain
 - Medical - diabetes, obstetric complication, pre eclampsia, health care utilisation
 - Social - work load, birth attendant, economic status

Risk scoring system (RSS)

For detecting risk factors and classifying pregnant women according to risk.

Steps to develop RSS

- Identify risk factors
- Categorise risk factors
- Scoring marks - to each risk factor according to severity and effect on pregnancy, labour and puerperium

RSS has to be done **based on the actual risk in the population.**

Consideration in risk scoring

- Can be different in different circumstances depending on the types of health problems, personnel, facilities, and equipment etc.

Always screening has to done during

- Pregnancy
- Labour
- Puerperium

Choose cut of points to balance

- Serious out comes of false negatives and
- Inconvenience and waste of resources- false positive

3.4.7 Risk Screening and Referral

The aim of prenatal care is to assess the risk of complications in later pregnancy, labour or delivery and arrange for a suitable level of care.

Though many systems of risk scoring of varying levels of complexity have been devised, most of the major problems which can lead to maternal mortality cannot be predicted with sufficient accuracy, except in the case of obstructed or prolonged labour.

In addition, risk approach for maternity care can only work if all women are screened by adequately trained personnel, and if appropriate referral services are acceptable and within their reach geographically, logistically and financially.

Even where the risk approach works, however, the need for emergency care is not eliminated due to the unpredictability of many complications. A history of prolonged labour in a multigravida with or without adverse outcomes, and short stature in relation to the local norms, are strong risk factors for obstructed labour. Cut off points for height and for number of previous births must be selected based on local circumstances to ensure

that the maximum proportion of those who may develop problems are identified without overwhelming service capacity.

Some health care systems have established the feasibility of providing maternity waiting homes for women with high-risk pregnancies, where they can wait for the onset of labour close to a health care facility well prepared to handle obstetric problems, without occupying the limited number of hospital beds.

3.4.8. Risk Factors Identifiable In ANC

Risk factors identifiable in ANC include:

- Age under 18 or above 35
- Primigravida
- Previous caesarean section, vacuum, or forceps delivery
- Previous perinatal death, stillbirth
- Previous Post partum haemorrhage
- Previous ante partum haemorrhage
- More than 6 pregnancies
- Twins
- Hydrominos
- Pre eclampsia
- Diabetes, cardiac problem, renal disease etc.

3.4.9 Anaemia

Anaemia is very prevalent among women in developing countries, as a result of iron and/or folate deficiency and of malaria and other parasitic diseases. WHO estimated that around 60 percent of pregnant women in developing countries (other than China) had nutritional anaemia despite efforts in iron supplementation, fortification and dietary modification?

Anaemia contributes to maternal mortality by making women more susceptible to infection and less able to withstand infection or the effects of haemorrhage. Anaemia is known to give rise to considerable long-

term morbidity in women, and at extreme levels may be associated with low birth weight. Anaemia during pregnancy may be aggravated by malaria, hookworm infection, and schistosomiasis.

Death from anaemia results from heart failure, shock, and infection due to lowered resistance. Effective prevention depends ultimately on lifelong nutrition of girls and women, and thus on agricultural and economic factors and food distribution patterns within communities and families. It can, however, be detected and treated simply and effectively during pregnancy.

Though the use of routine iron and folate supplementation in pregnancy has been abandoned in industrial countries where anaemia and subclinical deficiency are rare, this approach almost certainly has a place in areas where they are common; acceptable doses of inexpensive oral supplements can prevent anaemia from developing or treat mild to moderate disease. Supplements may, however, produce unpleasant side effects, such as nausea and constipation, and compliance may be poor, especially in the absence of symptoms of anaemia, or where symptoms are accepted as normal in pregnancy.

Iron can be given intra-muscularly or intravenously to ensure compliance and avoid gastro-intestinal side effects, but haemoglobin does not rise any more rapidly through this form of administration than through adequate oral therapy. Blood transfusion as a treatment for anaemia is discouraged because of the serious dangers of blood borne infection of, notably, HIV, malaria, syphilis, and hepatitis B.

3.4.10 Infections During Pregnancy

Pregnant women are sexually active and at risk of sexually transmitted disease, including HIV/AIDS. In prenatal care screening and treatment for syphilis is routine and is a cost-effective intervention

Many studies in developing countries have demonstrated high prevalence levels of both syphilis and gonorrhoea in pregnant women, leading to considerable long-term morbidity in women, and to congenital disease and prenatal mortality. Researchers estimate that of those women, who are currently pregnant, 10 to 15 percent have syphilis and two-thirds of all these pregnancies have an adverse outcome.

Reliable screening tests exist for both syphilis and gonorrhoea, as do safe, effective treatments. Screening can be conducted in the clinic while women are attending and treatment started immediately. Unfortunately, screening and treatment of sexually transmitted diseases are not often regarded as core components of prenatal care and may only be available in special clinics. Despite the serious logistic obstacles, effective screening, treatment and contact tracing programs for all pregnant women is rewarding.

Women are at higher risk of AIDS because the two predominant modes of transmission of HIV infection are sexual and prenatal. A study in Uganda has shown the HIV infection rate for women to be approximately 1.4 times that of men, and the rate of HIV infection is greater at an earlier age among women (15-19 years) than among men. The rate of transmission from male to female to be 2.5 times higher than from female to male.

The risk of transmission of AIDS is particularly high where high rates of sexually transmitted diseases, especially those which cause ulcerative lesions such as chancroid and syphilis, are found.

In the case of HIV, curative treatment is not available, and even treatment to delay the onset of symptomatic disease with antiviral drugs is not readily available or affordable in developing countries. However, some of the most effective strategies for sexually transmitted diseases are equally important for AIDS prevention. **These include**

- Promoting education strategies that modify or eliminate risk behaviours
- Providing adequate diagnostic and treatment facilities for patients
- Limiting complications by early detection and adequate treatment;
- Reducing the risk of infection during genital tract procedures through safe delivery procedures
- Reducing exposure to infection by offering health education;
- Limiting further transmission through counselling and partner referral and
- Promoting condom use and targeting family planning programs more aggressively toward men.

Treatment of symptomatic urinary tract infections is important, and it has been shown that screening for asymptomatic bacteriuria, followed by appropriate antibiotic treatment, reduces the incidence of pyelonephritis in the mother, as well as the incidence of low weight and premature delivery.

Depending on the local prevalence, screening and treatment for other important infectious diseases, including malaria and tuberculosis, should be included as essential components of prenatal care. Studies have shown that malaria is more prevalent in pregnant women than in non-pregnant women. Also, anaemia during pregnancy may be aggravated by malaria infection.

The increased risk of low birth weight babies and the risk of neonatal and infant mortality associated with low birth weight are of major concern in areas of endemic malaria.

Chorio-amnionitis and fetal infection and loss can be prevented through prompt referral of women with pre-term or pre-labour rupture of the membranes and prophylactic use of antibiotics.

In developed countries where hepatitis B is prevalent, vaccination of the infants of hepatitis B carriers is effective in preventing early infection and

its long-term sequelae. The incidence of viral hepatitis was twice as high for pregnant women than for non-pregnant women, in studies for Ethiopia and Iran. It is also more serious, with case fatality rates up to three and a half times as high. Malnutrition increases the chances of contracting hepatitis, as well as its severity. Premature labour, liver failure, and severe haemorrhage are common complications of severe hepatitis

3.4.11 Role of Trained Traditional Birth Attendants (TTBA's)

In general Trained traditional birth attendants are important and helpful in advising and referring during pregnancy & delivery. Because TTBA's can easily identify problems such as

- Young primigravida
- Previous pregnancy problems
- Short stature (depending on local norms of risk)
- Bleeding before or during labour
- Pre mature rupture of membrane

TBAS - assist 60% -80% deliveries throughout the world are called by different names such as "comadrone" co mother of clients in Latin America. The name explains their importance.

One of the primary aims of trained birth attendant training programs throughout the developing world is to promote clean delivery in the home through education and provision of basic supplies such as:

sterile razor blades and washable plastic sheets. It is, however, difficult to ensure cleanliness in all deliveries, particularly where access to clean water is limited.

3.4.12. Group Assignment and Discussion

1. Should a pregnant woman fast? Why?

2. What do you understand by the word “RISK”? Discuss about cross cultural concepts of being “ at risk”
3. What is the role of TTBA's in antenatal care?
4. What is the Importance of weight measurement during antenatal care?
5. What are the effects of anaemia on the health of the mother and the fetoes?
6. What are the effects of sexually transmitted diseases on the fetus and the new born?
7. What are the problems identified in treating anaemia during pregnancy?

3.5 Delivery Care Service

The most elementary knowledge in delivery care is the The 3 c's

- Clean hands
- Clean delivery service
- Clean cutting of the cord

Always discuss with TTBA's

- To prepare in Advance
- To avoid massage
- To avoid vaginal examination
- About handling of the cord
- About care for the newborn
- About referral
- About recording. (Recording is a compulsory for TTBA's and all health workers at all Levels) and
- Supervision of TTBA's is important and mandatory.

Some traditional practices of TBAs are sound and helpful

- Allowing presence of relatives
- Encouraging walking around
- Allowing free position in delivery

- Placing the baby at the mother's breast even before umbilical cord is cut.

One of the primary aims of trained birth attendant training programs throughout the developing world is to promote clean delivery in the home through deduction and provision of basic supplies such as sterile razor blades and washable plastic sheets. It is, however, difficult to ensure cleanliness in all deliveries, particularly where access to clean water is limited.

Educating trained birth attendants, women, their families, and community health workers to recognize the early signs of delivery problems including sepsis is a very important activity to save the life of the mother and the new born.

3.5.2. Group Assignment and Discussion

1. For promotion of delivery care training of TTBA's is essential. Why?
2. What are the important measures to decrease neonatal tetanus?
3. What are the common home delivery practices in your birth area in relation to management of labour, and perception of duration of labour?
4. What are the common practices that contribute to poor delivery outcome?

3.6 Post Natal Care Service

Post Natal Care (PNC) a care up to six weeks in the post partum period. Incorrectly given least attention and usually neglected.

PNC - first day after delivery

PNC - from first day to 6 weeks

During postnatal care always give equal attention and care for both the mother and the new born

Objectives of Postnatal Clinic:

- Observe physical status
- Advise, and support on breast-feeding
- Advise on Family Planning
- Provide emotional support
- Health education on weaning and food preparation.
- Discuss about menstruation (when it will restart) and when to start sexual relation (this point is usually overlooked in post natal clinics)

Different cultures have different postnatal care. For example in Ethiopia staying indoor for 40 days. The rationale is justifiable as it gives rest to the mother and enough time for breast feeding .The disadvantage is the Immobility and depriving the new born from sun light exposure.

N.B. Always remember that early detection of puerperal sepsis depends on careful postpartum visit of women at home

3.7 Summary on Major Causes of Maternal Mortality and Services to be delivered

An effective program to prevent maternal deaths will include services at the community, health centre and referral level, all of which must be coordinated to ensure their effective functioning.

Preventing the main causes of maternal death will require a spectrum of services including prenatal and delivery care, family planning, and treatment for the complications of unsafe abortion (with provision of safe abortion depending on the law). Provision of comprehensive and integrated care increases the chance of achievement of the objectives of maternal health care.

The major types of services and activities to be conducted to prevent and decrease maternal mortality from the major causes are listed below.

- Family planning can reduce maternal deaths from all causes, by reducing the fertility rate, and especially, unwanted pregnancies,

and thus unsafe abortion. Further reductions in deaths from unsafe abortions can be achieved through provision of emergency treatment for complications.

- Antenatal care during the prenatal period can improve the health of women and their infants through routine screening and treatment for sexually transmitted diseases, urinary tract infections, and locally prevalent infectious and parasitic diseases. Particularly malaria. It also help to manage hypertensive disorders of pregnancy, and assessing the risk of complications at delivery (particularly obstructed labour),
- Prophylactic iron and folate supplements are recommended where anaemia is common and identified, with screening.
- Tetanus toxoid immunization is highly effective in reducing neonatal deaths and the 30,000 estimated maternal tetanus deaths yearly.
- Health education during the ante natal period may increase awareness of danger signs (such as bleeding, pre-labour rupture of the membranes, and generalized oedema (swelling), offer information about appropriate treatment, including where, how and when to obtain it, and encourage community planning for routine and emergency care, including communication and transport. The most important component of antenatal care, however, is likely to be referral services for women, in case they are needed.
- A proportion of the cases of obstructed labour can be predicted, well before labour, from previous obstetric history and height, so that arrangements can be made for adequately supervised labour with access to operative delivery if required. The use of the partograph in labour leads to earlier diagnosis of prolonged labour and more timely intervention or transfer, which can improve the survival chances of mother and infant.
- Haemorrhage is largely unpredictable, but can be prevented by routine active management of the third stage of labour by skilled

birth attendants using oxytocic drugs. Effective treatment includes rapid manual removal of retained placenta, oxytocic drugs, intravenous fluids, blood transfusion, and surgery.

- Minimizing vaginal examinations and ensuring clean delivery practices can prevent sepsis at delivery. The latter can be promoted through education of women, training of trained birth attendants and other health care staff and provision of adequate equipment and supplies. Early detection of puerperal sepsis depends on careful postpartum visit of women at home.
- Deaths from hypertensive diseases of pregnancy are the most difficult to prevent. However, most recommend for prevention of pre-eclampsia to give low dose aspirin with calcium supplements. This may become the most effective intervention to reduce mortality, especially in women at high risk and areas of high prevalence if women are seen early in pregnancy. Though the choice of treatment for advanced disease is still under investigation, it is clear that care in referral centres reduces mortality. As such, early detection, education to promote recognition of danger signs, and referral are necessary.

CHAPTER FOUR

Children's Health Problems

4.1 Learning Objectives

The student will be able

- To define a child
- To identify major problems of children
- To understand magnitude of children's problem
- To understand the importance of proper early development
- To understand causes of PNM, NNM, IMR CHM
- To define the role and importance of mothers' health on children

4.2.1. General Consideration

A child means "... every human being below the age of eighteen years, unless under the law applicable to the child, majority is attained earlier."

Conventions on the right of the child. Part one, article one 1991.

Every year 13 million children die from preventable diseases. More than 60% are due to

- Pneumonia: 3.6 million
- Diarrhoea diseases: 3 million
- Vaccine preventable diseases and combination of the three: 2.1 million

In Ethiopia there are 2.4 million births per year, however the magnitude of death is very high; 1500 under five's die /day, 210,000 infants die per year, and 350,000 die before they reach their 5th year.

Among these deaths 75% are preventable by immunisation and improved management of diarrhoea.

4.2.2.

With favourable environment the process of growth and development is a normal one. Certain stages of growth and development are crucial such as young age, and reproductive age or special characteristics like pregnancy, reproduction, and growth and development.

These conditions make such groups vulnerable and expose them to disease, disability and death (the 3 D's)

This is a major concept that has to be addressed in both curative and preventive services.

Growth is a continuous process and every stage is built on the one before it and it affects the next.

So at every stage

Physiological and psychological requirements has to be fulfilled. **If not**

- It is difficult to catch by or repair the damage
- The body's potential to adapt in a healthy way diminishes throughout life

i.e. the health of the child determines the health of the adult as also shown in the next paragraph.

Malnutrition and, disease **expose to** poor mental & physical growth poor mental & physical growth **expose to** poor performance at school work poor performance at school work **expose to** reduced adult capacity to earn an income, initiating change, respond to new opportunities reduced adult capacity **expose to** Poor, large families further **exposing to** disease and malnutrition **and the cycle continues with the next generation.**

In summury, children whose earliest years are faced by hunger or disease or whose minds are not stimulated by appropriate interaction with adults and their environment pay for these early deficits throughout their lives and so does society. Such children are far more likely than

their more fortunate peers to do poorly in school, to drop out early, to be functionally illiterate. Collectively, these children who have been deprived in early life therefore affect labor productivity and national economic prosperity.

Where is the best place to break the cycle?

Before the child is born and during the early years of his/her life. i.e.

- Special protection for mental and physical growth
- Families, communities and governments must prevent the worst aspects of poverty affecting growth and development.
- Special measures to protect those vulnerable months & years by such means as:
 - Breast feeding (nature protects the vulnerable years)
 - Immunisation,
 - Growth monitoring,
 - Management of diarrhoea disease and ARI,
 - Low cost water and sanitation services etc.

4.2.3. Factors That Affect the Health of Children

Some of the factors that affect the health of children include:

- Balanced and adequate diet
- Poor personal and household hygiene
- Lack of safe and adequate water supply
- Poor sanitation
- High fertility rate
- Fast increasing population growth
- Poor maternal health services
- Maternal education
- Low status of women
- Poverty etc.

Few indicators for health status of children in Ethiopia

MCH coverage; 25.5%

EPI Coverage: 59.7%

Fully Immunized: 38.41%

Infant mortality rate: 110/1000

Under five mortality rate: 161/1000

ORT use rate 38%

4.3 Perinatal Mortality (PM)**4.3.1 General Consideration**

Of the 13 million deaths each year in children under 5 years old in the developing world, 3 million occur in the first week after delivery. In addition, there are some 4 million stillbirths or late fetal deaths each year. birthweight of at least 1,000 grams, who die.

Perinatal mortality is the number of late foetal deaths (also called still births) and early neonatal deaths (before day 7 (168 hours) per 1000 births. Deaths of all foetuses and new-borns with at birth weight of 500 gms (gestational age of 22 weeks or crown-heel length of 25 cm, when birth weight is not known), whether alive or dead, should be considered as perinatal deaths.

Among the estimated 25 million low-birth-weight babies born each year worldwide, 24 million are in developing countries where 80% of global births occur, The perinatal mortality rate ranges from 40 to 60 per 1,000 live births in most developing countries, but it is between 6 and 10 in industrial countries. There is always problem of knowing the exact magnitude of PNM due to poor or lack of recording. The above-mentioned figures, in the developing countries, usually come from hospital statistics.

4.3.2 Causes of Perinatal Mortality

Causes of Perinatal mortality include:

- Low birth weight
- Cord prolapse
- Asphyxia
- Birth injury
- Congenital anomalies
- Sepsis
- Neonatal tetanus
- Complicated labours (prolonged, obstructed, breech, transverse)
- Mismanagement of labour
- Anoxia due to problems such as antepartum haemorrhage
- Maternal age
- Maternal anaemia
- Maternal health problems like, renal problem, diabetes, hypertensive disorders
- Maternal infections
- Parity
- Placental insufficiency
- Ruptured uterus
- Mother's utilization of health services
- Maternal education

4.3.3 Low Birth Weight

Low birth weight is an extremely important factor predisposing for PNM. Because the perinatal mortality rate for low-birth weight babies is five to thirty times higher than for fetuses or infants of normal weight. Low-birth-weight infants who survive may have serious neurological problems and hearing and visual defects and may be subject to slow development throughout life.

Causes of low birth weight include:

- Short stature
- Low pre-pregnancy weight
- Inadequate weight gain during pregnancy
- Anemia
- Reproductive tract infections,
- Other infections during pregnancy. For example, women suffering from malaria in sub-Saharan Africa give birth to an estimated 3 million severely underweight babies. A woman with HIV has a 25 to 40 percent chance of passing the infection on to her fetus in the womb or at birth. According to WHO, 25 percent of the children born with HIV will be diagnosed with AIDS in the first year and 80 percent by the fourth year.
- Antepartum haemorrhage
- Eclampsia,
- Poor management during labor and delivery. Associated with development impairments among children. Birth asphyxia in the first minutes of life kills or causes brain damage (notably cerebral palsy)
- Maternal death. If a woman dies, the effect on her fetus or newborn is devastating. The overwhelming majority of pregnancies that end in maternal death also result in fetal or perinatal death. Among infants who survive the death of the mother, fewer than 10 percent live beyond their first birthday.

When addressing low-birth-weight one has to give emphasis for low-birth-weight girls. Because low-birth-weight girls are less likely than boys to catch up. Because they are fed less, marry early, carry a heavy workload, and spend a considerable portion of their lifespan in pregnancy and lactation. Persistent low nutritional status and high-energy expenditure predispose such girls to bear low-birth-weight babies themselves, passing the problem on to the next generation.

4.4. Childhood Problems (Selected)

Worldwide about 14 million children under the age of 5 will die each year and Majority of these deaths occur in developing countries.

In developed countries, deaths under age the age of five constitute only a very small proportion of all deaths, while in many developing countries deaths of young children constitute a large share of total deaths. About 40% of all deaths in developing countries are deaths of children under age 5 and nearly 30% of all deaths in the world are deaths of young children in developing countries. The difference in deaths of young children in developed and developing countries shows that the majority of causes of CHM are preventable. Accordingly the major causes of death are infectious, parasitic, respiratory and diarrhoeal diseases which are easily preventable in the developed world. For example, deaths from many of the most common childhood diseases are preventable through immunisation. Research in many contrives has consistently indicated a strong inverse relationship between female education and child mortality.

4.4.1. Diarrheal Diseases

Diarrheal diseases are serious illnesses, widespread in developing countries. In virtually all developing countries diarrhea! diseases are among the five leading causes of death in children under five and, in many countries the leading cause of death in children.

Diarrhoea is defined is the passage of three or more loose or watery stools in 24 hours. Diarrhoea which lasts for more than 14 days is called persistent diarrhoea.

Diarrhoea is most common in children, especially those between 6 months and 2 years of age. It is also common in infants under 6 months who are drinking cow's milk or infant feeding formulas. In addition to bringing death, diarrhea is also a significant contributor to malnourishment in those children who survive. Diarrhea acts through

increased malabsorption, reduced food intake caused by loss of appetite and food withdrawal, and fever to deprive children of needed nourishment.

Diarrhoea is worse and more common in children with undernutrition. Malnutrition is an important element of diarrhea. Many children in developing countries are malnourished. Frequent episodes of diarrhea contribute to malnutrition because appetite diminishes, feeding is interrupted, and absorption of nutrients is reduced. Malnourished children then become more vulnerable to infections, creating the potential for a vicious cycle of malnutrition and infection. Malnutrition is a contributing cause in approximately one-third of all child deaths. In developing countries, 12% of children under age 5 suffer from acute malnutrition and that almost 40% suffer from chronic malnutrition.

Other factors that contribute to death due to diarrhoea include: short birth interval, acute respiratory tract infections (ARI), measles, and malaria etc.

Unsanitary birth procedures and a mother's unclean hands or breasts represent potential sources of contamination to the newborn Infant but these are slight compared to those encountered as the child grows and begins to drink water and eat weaning foods. The primary source of bacterial contamination is human feces. The agents may be transmitted to the child in a variety of ways including

- Direct contact with feces through another person's dirty hands,
- Direct contact through the child crawling on unclean surfaces,
- Indirectly through contaminated water which is then transmitted to the child through drinking water, bottle formula, or weaning foods, or
- Indirectly through hand transmission during preparation of weaning foods. Perhaps the most prolific source of infection is weaning foods.

If the child does not recover, prolonged or severe diarrhea will usually lead to dehydration, which is the main cause of death due to diarrhea.

Mortality caused by dehydration from diarrhoea is the largest single contributor to the mortality of young children

Oral rehydration therapy (ORT) can treat 85 to 95 percent of cases of dehydration from watery diarrhea in all age groups. Oral rehydration therapy does not cure diarrhea, but prevents dehydration, which leads to death. ORT largely replaces intravenous therapy, which requires trained personnel, sterile fluids, and expensive equipment. ORT is simpler to administer, and much less expensive. This makes it less dependent upon highly trained health workers and fixed facilities, and compensates more quickly for nutritional loss due to diarrhea. Disease some of the factors that need emphasis in prevention of diarrhea are:

- Adequate feeding during and after diarrhea. Episodes, including
- Breast milk, diluted formula, and regular foods given to children
- To demonstrate and encourage parents to prepare and give home made fluids.
- Support of breastfeeding for its immunological properties and because it reduces the risk of exposure to contaminated substances.
- Improved weaning practices
- Clean water (though not completely safe or available)
- Proper food storage and clean feeding utensils
- Proper sanitation in and around the house including children's crawling and play grounds and proper disposal of the stools of infants and young children and use of latrines
- Personal hygiene including mothers' practice of washing hands before breast-feeding after return from toilets.
- Immunization such as against measles
- Health education programs which build upon an understanding of traditional practices and beliefs to promote positive changes with mothers, health personnel, and community leaders.

- Epidemiological surveillance to determine prevalence and incidence of diarrhea in order to select populations at high risk.

Use of antimicrobial agents is discouraged because mostly they are ineffective against the causes of most childhood diarrhea and they are sometimes harmful. Prevention of diarrhoea- Diarrhoea can be prevented by the following practices

4.4.2 Malaria

Malaria is a major cause of illness and death in Sub-Saharan Africa. Although persons of all ages can get malaria, two groups are at high risk: children under five years of age and pregnant women.

To reduce the effects of malaria on these high-risk groups, certain types of treatment are necessary. For pregnant women it is important to provide prophylactic treatment with drugs such as chloroquine in order to prevent the risk of abortion of the fetus or low birth weight of the neonate. In areas where malaria is endemic, it is recommended that "presumptive" treatment be given to young children, that is, to treat all young children with drugs when it appears that the fever is due to malaria and that the child will respond to treatment with chloroquine (or other appropriate medications in the case of chloroquine-resistant areas).

4.4.3. Vitamin a Deficiency

Vitamin A deficiency (VAD) is a public health problem in more than 75 countries and affects as many as 228 million children sub clinically at a severe or moderate level. Some 3.1 million preschool age children have eye damage due to due to vitamin A deficiency and more than 250,000 preschool children go blind every year.

Vitamin A deficiency is the most preventable cause of blindness worldwide. The impact of vitamin A deficiency, however, is more extensive than the ocular effects. Xerophthalmia and low vitamin A levels

are associated with increased mortality and severity of morbidity from respiratory and gastrointestinal disease. Recent findings have indicated that vitamin A is a key modulator of the immune system and may play a role in preventing the development of cancer. Sufficient vitamin A stores could significantly reduce the risk of transmission of HIV from infected mothers to their babies.

Xerophthalmia is an eye disease that results from vitamin A deficiency (VAD) and is the primary cause of blindness among children in the developing world. Inadequate vitamin A status can vary from marginal deficiencies without clinical signs, to the presence of early and reversible clinical signs of

- Night blindness (frequently the earliest symptom)
- Bitot's spots,
- Conjunctival xerosis

In cases of severe depletion with advanced and irreversible corneal changes there is a high probability of blindness.

Children with protein-energy malnutrition, respiratory infections, measles, and/or diarrhea are at especially high risk of developing vitamin A deficiency. Recent research has found that even children with mild xerophthalmia may have a much higher mortality rate than children without apparent deficiency.

Simple techniques for assessing vitamin A status and xerophthalmia should be part of primary health care programs, especially in areas where vitamin A deficiency is endemic. Because biochemical tests, although accurate, are not always practical. Primary health care workers need to be trained to recognize the clinical signs of vitamin A deficiency.

Any intervention that proves effective in improving vitamin A status in deficient populations will on average reduce mortality by 23% in infants and children between the ages of 6 months and 5 years. Global

estimates indicate that between 1.3 and 2.5 million deaths could be averted each year by improving vitamin A status. Among the deficiencies caused by the three micronutrients (iodine, iron, and vitamin A) the programme on vitamin A is potentially the most important achievable international health goal

Measures to combat vitamin A deficiency are generally grouped into the following:

- Dietary modification by improving food availability through the Production and preservation of vitamin A-rich foods, and increasing food consumption
- Breastfeeding protection and promotion,
- Food fortification and supplementation
- Public health measures such as on components of primary health care

Role of breast feeding in preventing vitamin A deficiency

Promotion and protection of breastfeeding is a fundamental aspect of preventing vitamin A deficiency.

Breast milk is virtually the only source of vitamin A the first few months for many infants and often continues to be one of the most important sources through age two. Without breast milk, newborns can maintain optimal vitamin A for no more than a few weeks. Although vitamin A concentrations in human milk are dependent on the mother s vitamin A status, vitamin deficiency is rare among breastfed infants, even in parts of the world where vitamin A deficiency is endemic. Promotion of exclusive breastfeeding for 4 - 6 months and continued breastfeeding with complementary foods thereafter should form part of any dietary intervention to improve vitamin A status.

CHAPTER FIVE

Health Services for Child Care

5.1 Learning Objectives

- Understand importance and justification of child care
- Understand the role of child care in national productivity
- Describe types of health services and individual contribution to health of the child
- Understand role of screening, EPI, Growth monitoring on the health of children
- Understand the importance of school health

5.2 General Consideration

“Blessed are the young, for they shall inherit the national debt”

H.Hoover (President of United States of America) Health status of the children of a nation is a highly reliable index of health the population What we do for our children today, especially at their younger age will in large part determine the course of the future of our country and it's future citizens.

In both developed and developing countries children should be placed at the centre stage in all development thinking and implementation. Because care for children is related with:

- Future investments as children are the future of the nation.
- Strong belief as ours and others culture give high value for having children
- Future health because national productivity depends on today's children.

5.3.1 Screening

One of the most neglected services which is often forgotten is screening. It is a very important activity which has to be carried out every day in all institutions delivering child health services. There is an immense benefit for children, as well as to their mothers, by the brief assessment (history and physical examination) at every visit to the clinic. Screening is an important tool to avoid “missed opportunities. The need for vaccination, growth monitoring as well as mothers’ need in terms of antenatal care, family planning etc. can be easily identified.

5.3.2 Expanded Program On Immunization (EPI)

Immunisation is the process of protecting a person from a specific disease.

It is protection of a susceptible host from a specific disease by administration of

- A living modified agent
- A suspension of killed organism
- An attenuated toxin.

Immunisation decreases susceptibility by producing antibodies or sensitised cells to fight the agent and its product.

Types of Immunisation

- Active - Vaccine which acts in place of natural antigen
- Passive - ready-made antibodies and our body do not take in the making.

E.g. Foetus, TAT, snake antiserum.

Another classification can be:

- Natural such as Mother to foetus, infection
- Artificially induced immunisation such as vaccine (antigen), antibodies

Herd Immunity

Herd immunity indicate that large proportion of people in a certain community are immune. The implication is when there are few susceptibles the natural infection cannot keep going in the community and incidence goes down to a low level.

Immunisation to be effective in controlling communicable disease 75% of the population and 75% of new-borns have to be vaccinated. Discontinuing vaccination programs have serious risk of causing an epidemic.

Objectives of EPI

1. To reduce morbidity and mortality from six major diseases - diphtheria, pertussis, tetanus, measles, poliomyelitis and tuberculosis by immunising all children throughout the world by 1990.
2. To promote national self-reliance in delivering immunisation services within comprehensive health services.
3. To promote regional self-reliance in vaccine production and quality control.

The activities outlined were:

- Provide immunisation or information about immunisation at every health contact
- Reduce dropout rates between the first and last immunisations
- Increase the priority given to control of measles, polio and neonatal tetanus
- Improve immunisation services to the poor in urban areas
- Use special approaches such as national immunisation days, where they strengthen the health infrastructure and contribute to a sustained improvement in coverage.

Strategies to conduct EPI sessions

1. Fixed (static) facilities offering immunisation every day in all health institutions. Advantages

- No additional costs for transportation
- Personnel who can give injections and instructing parents are already available as is basic medical equipment
- Easier to keep vaccines at proper temperatures
- Client records may more easily established and kept up to date

Disadvantages

- Parents must travel long distance to bring children to health centres. The further parents travel, the less likely they are to come for immunisations.
- Absence of integrated health service

2. Outreach services and mobile teams

Important, especially for children in remote rural areas and poor urban as well as other children whose parents are unable or unwilling to come to health institutions

Disadvantage

- Scheduling visits and adhering to schedules are difficult because of transportation
- Problems or poor weather.
- Outreach services and mobile teams can be expensive.
- Staff need to be paid per diem
- Vehicles must be bought and maintained.
- Strict reminding is necessary for parents to be available on the days of appointment

3. Intensive immunisation campaigns

This consists of regularly repeated mass campaigns which are mounted to stop epidemic by quickly immunising as many susceptible people as

possible. These campaigns have sharply increased vaccine coverage, especially, those of single dose vaccines. Such campaigns can involve non health workers for polio vaccination as it is given orally.

Antigens

Antigens given are: Bacterium Culmette Guirrin (BCG, for tuberculosis), DPT (depththeria, pertussis, tetanus), OPV (oral polio vaccine), Measles vaccine, tetanus toxoid for reproductive age and pregenanant women.

Types of Vaccine for EPI

Vaccines can be killed microorganisms, live but weakened (attenuated) or toxoid, i.e., harmless forms of toxins or poisons that the bacteria produce.

- Killed vaccines are DPT and TT, which should be kept just above freezing point in the refrigerator (0 - 8°C).
- Live attenuated vaccines are measles, polio and BCG. These should be deeply frozen, at around -20°C. Since BCG is sensitive to UV light and heat, it is packaged in coloured vials and they should be protected against the sunlight.

Table 2 MOH recommended immunization schedule

Vaccine	Number of Doses	Minimal Age for First Dose	Minimal Interval between Successive Doses
BCG	1	At birth	
DPT	3	6 weeks of age	4 weeks apart
OPV	4	At birth 6 weeks of age	4 weeks apart
Measles	1	9 months of age	
Tetanus Toxoid	5*	For use in prevention of neonatal tetanus	The 2 nd 4 weeks after first dose
		First dose at first contact with susceptible women.	

* Five doses give protection for life.

Routes and dosages

- BCG - 0.1cc, intradermal, right deltoid
- DPT - 0.5cc, deep intramuscular, on the thigh
- OPV - 2 - 3 drops per os
- Measles - 0.5cc, subcutaneous, left upper arm

Cold Chain

Maintaining cold chain is one of the very few important activities that should be conducted, without any exception, by all concerned in the manufacturing of vaccines and delivery of immunization services.

Cold chain is the equipment and people that ensure vaccine potency by keeping vaccine cold all the way from the manufacturer to the child/mother or the consumer.

The important and guiding concept behind cold chain is once vaccine potency is lost it cannot be regained. Using a vaccine that has lost potency is considered to cheat the mother and to leave the infant unprotected and exposed for diseases and disability and possibly to death.

Levels of cold chain

1. Central store - usually located in the nations capital
2. Regional store - located in a major regional town
3. Zonal store - located in the respective zonal town in the region
4. District store - located in the respective district health departments (usually a rural town)
5. Health institution store
6. At consumption site -either in the health institution or at the village level through outreaches

Assignment And Group Discussion

1. Why BCG At Birth? DPT at 6 weeks?
2. Why polio 4 doses? BCG & measles one?

3. Why DPT 3 doses? BCG & measles one?
4. Why DPT one month apart?
5. Effects if measles vaccine if given at 3 or 4 months?
6. Is there maximum Interval between doses of DPT, Polio, TT?
7. Is there minimum Interval?
8. Do you give polio for a child with diarrhoea?
9. A mother who had DPT as a child, does she need TT when becomes an adult and pregnant?
10. What the barriers which hinder the successful implementation of EPI in Ethiopia?

5.4. Growth Monitoring

5.4.1. General Consideration

Growth is a continuous process from conception to physical maturity. There is always normal growth whenever nutrition and environment are good for Age. When these conditions are satisfied growth rate is the same for well nourished & healthy. Always to follow and know that growth is satisfactory should be given a priority rather than only try to prevent malnutrition

When children are growing they become

- Taller, fatter, heavier,
- "Grow out of their clothes"

Factors influencing growth

- Family genes: childhood growth patterns and Adult heights
- Adequate nutrition
- Infections diseases
- Endocrine: hormones such as growth hormone or disease of pituitary
- Systemic diseases: diabetes
- Stress
- Abuse etc.

- Effects of race / ethnicity / genetics Vs nutrition /attitude/ environment
- International reference populations
- Local Reference
- One time measure Vs dynamic measurements

Importance of growth monitoring

Why do we give so much emphasis for growth monitoring? *Because*

- Growth is a very sensitive measure of health
- Weight gain is a very sensitive measure of growth
- Growth faltering is the best indicator for early detection of health problems
- Such as nutritional and infectious one can identify steady growth, which is a best indicator of a child's health.
- It is important for follow up of children
- It tells the nutritional status in a given community.
- If it is done right malnutrition can be identified **before it affects the BRAIN.**

When is the best time to start growth monitoring?

The first 5 years are a crucial period in the development of a child.

Brain development is almost wholly completed by age 2 and malnutrition peaks at around 24 months of age. This implies the need for early interventions of health, nutrition, cognitive stimulation, and socialization programs etc.

Do children grow at a normal rate?

We have to measure their length to know how tall and thickness to know how fat they are. As growth is an increase in size and weight one has to measure their weight and ***to be certain measure has to be taken regularly.***

To know the steady growth in regular measurement one has to use Growth Charts. Growth Charts are extremely important and central in growth monitoring.

Growth chart

A Growth chart is a very important record which is used as a personal growth chart for the child and has record of the child's illnesses and progress and has notes about nutrition advice given to mother

Growth Chart:

- Tells direction of growth
- Reveals significant change in growth pattern.
- Helps in early detection of growth failure. **How?**

Through regular measurement & recording one can have and plot

Growth Curve

Always remember that:

- Weighting the child is not a problem. But regular & accurate plotting!!!
- Growth chart is essential for every child as ANC card is for every pregnant Mother!!!
- An important part of health education is to teach mothers to keep growth charts carefully!!!

5.4.2. Methods of Assessing Nutritional Status

1. Clinical history and examination
2. Nutritional Anthropometry
3. Biomedical and laboratory tests

Anthropometric Measurements

Anthropometric Measurements are useful for growing children to detect growth failure. There are two methods depending on whether the child's age is known or not.

- When age is known

Weight and height for age

- When age is unknown
 - Mid arm circumference and
 - Head - chest circumference ratio
 - Weight for age
- Measures Acute and chronic malnutrition.

Weight for height

- Measures acute malnutrition - wasting
- Useful for nutrition surveys on older children.

Height for age

- Measures chronic malnutrition (stunting)
 - Mid upper arm circumference
- Simple method
- Can be done by all health units, surveys
- For children above one year and under 5.

Why between 1 and 5?

There is little change in arm circumference between 1 and 5 years of age.

Growth is in length and the upper arm does not get fatter

Mid upper arm circumference

- At birth is 11 cms
- At the first it becomes 16 cms and
- By the age of 5 years it reaches 17 cms. Accordingly
- Healthy children above one year have mid- upper arm circumference of 16 cms.
- Undernourished children above 1 year have mid- upper arm circumference of 13.5 cms
- Malnourished children have mid- upper arm circumference of <12.5 cms

Head - chest circumference Ratio

Over 6 months the chest circumference is larger than the head and If it is the same or smaller after six months it shows that the child is undernourished.



Comparison of Anthropometric Indicators for Growth Monitoring

1. Weight-For-Age

Advantages

- Good basic indicator, combining acute and chronic malnutrition, for monitoring ongoing programs.
- Sensitive to small changes (although many variables influence small fluctuations in weight)
- Measure is objective and repeatable.
- Sole tool (scale) is portable and relatively inexpensive.
- Weighing is relatively easy for inexperienced health workers to manage, although it does require a literate worker.
- Measure is not time consuming.

Disadvantages

- Not sensitive to a stunted child who is growing well (below but parallel to a normal growth channel) or to the very tall child who may be malnourished.
- Relies on age data, which are often subject to error. Age data for children below two years old have been found accurate, or, if in error, easily corrected, but it is difficult to accurately estimate unknown ages for children over two years.
- Mothers in some countries have objected to hanging their children from the scale during weighing.

2. Length/Height-for-Age

Advantages

- Good indicator of past nutrition problems.
- Measure is objective, repeatable, and has a low variability.
- A length and height board can be made locally for a minimum investment, and the boards are easily transported.

- Rarely are mothers reluctant to have child measured because of appearance of the board.

Disadvantage

- In growth monitoring projects It should be supplemented by another indicator like weight-for-age or weight-for-height because changes in height occur relatively slowly.
- Requires two different techniques if programs include all preschoolers: recumbent (lying down) length (children 0-2 years) and standing height (children 3-5 years).
- More difficult for unskilled workers to learn to take accurate length/heights than to weigh a child with a simple scale.
- Requires two persons to take the measure.
- Relies on age data, which are often subject to error.

4. Weight-for-Length/Height**Advantage**

- Good indicator to distinguish those who are well proportioned (weight/height) from those who are thin (or heavy) for their height.
- Indicator does not require age data, which are often inaccurate and difficult to obtain.
- Measures are objective and repeatable.

Disadvantage

- Depending on the cut-off points chosen, weight-for-height can underestimate malt nutrition by classifying those who are short and thin as normal.
- Requires taking two measures; therefore, problems of purchasing or making the instruments and transporting them are compounded.

- Weighing and measuring height will require more training time and may be too complicated and time consuming for the inexperienced clinic worker to do with frequency.
- Some mothers may be reluctant to have their children weighed.
- Requires two persons to take length or height measure.

Arm Circumference

Advantage

- Indicator of severe current malt nutrition, whether or not stunting is present
- While it may not detect changes as rapidly as weight monitoring, it will indicate changes in nutritional status over a short time.
- Measurement is taken with an inexpensive and portable arm tape, which can be made by project per. sonnet.
- Quick to use.
- Arm tape can be color coded for use by non-literate health workers.
- Indicator does not require age data, which can be inaccurate and difficult to obtain.
- No known objection by community to this measure.

Disadvantage

- Will only identify children with severe malnutrition. It is more difficult to determine who is borderline.
- Variability is high on measurement. Field workers need practice taking measurement to do it accurately. Finding the mid-upper arm and placing the tape around the arm without compressing the tissue is difficult.

5.5. School Health Services (SHS)

5.5.1. Preschool Education Program

Preschool Education Program's major purpose is to improve young children's capacity to develop and learn. The programme can focus on

- Improving parents' teaching and child care skills
- Delivering services directly to the children
- Improving the child care services available in the community

The most effective programs combine basic nutrition and health care services with activities designed to stimulate the children's mental, language, physical, and psychosocial skills which are mutually reinforcing.

Many studies and programmes have shown that enhancing the experience of children particularly disadvantaged children from their youngest years significantly improves their potential for growth and development throughout life.

School children, mostly, in the developing world, are one of the population groups who constitute the largest segment in population. By virtue of their number, children are entitled to a major share of the community health services. During this period, there are rapid physical, mental and emotional changes; hence there is a great need for health supervision and guidelines. The school going child experiences group living outside the home, learns to adjust in the community and is exposed to hazards of infection in a mixed community.

5.5.2. Importance of School Health Services

- School children constitute a large segment of population in any country.
- Well-defined target group at one place, with the help of teachers so that their health status, growth and development can be monitored easily.

- Children learn healthy habits in school based on the health education received at school from teacher and other health professionals and thus spread the message of healthy living in the community where they live and grow.
- A child who is not well cannot derive the full advantage of the education imparted at school.
- Early detection of defects in growth and development, vision, hearing, speech, and behavioural problems; correction will help the child to overcome the handicap and thus contribute better to the community where he lives.

General Objectives of SHS

- Ensure achievement of children's potential to the fullest possible extent for effective physical, mental, intellectual, emotional and social living as adults.
- Enable children to achieve highest possible performance.
- Prepare children for smooth transition from childhood to adulthood with minimal health risk encountered through adolescence.
- Promote community health through parent-teacher-pupil interaction.

Specific Objectives

- Promotion of positive health by periodic medical inspection of school children.
- Early diagnosis and treatment of disease, institution of remedial measures to correct the defects observed during medical inspection.
- Control of communicable diseases by immunisation.
- Ensuring proper environment, sanitation in school, including attention to housing facilities, protected water supply, drainage, and disposal of waste, hygienic environment where mid-day meals are prepared and served.
- Health education to impart knowledge and develop health attitude and habits to fight superstition, misconceptions, beliefs and facts, which are

likely to affect health, and make maximum use of available health services.

- First aid and emergency care.
- Improvement of nutritional status of school children by way of health education, supplementary nutrition, mid-day meals, etc.
- Promotion of appropriate social and emotional behaviour and correction of behavioural problems with the help of child guidance clinics.
- Detection and proper guidance to physical and mentally handicapped children.
- Awareness of health problems of national importance, ways and means of prevention and population-control education, nutritional, communicable diseases, immunisation, etc.

Components / activities of the SHS

Provision of Healthy School Environment

- Safety and sanitary conditions - includes safety and sanitation of play grounds, sewage system, recreation facilities, eating and drinking establishments, class room sanitation - lighting, ventilation and crowding,
- Traffic safety, substance abuse, supervision of motor vehicle accident preventive modalities by simulation
- Consideration of safe school day in terms of length, class size, classroom procedures (disciplines), etc.

Provision of Health services in the school

- Curative services - first aid care, treatment of minor illnesses such as injuries, examination and treatment at the school clinic, follow-up of special cases, etc.
- Preventive services - immunisation, growth monitoring, counselling services, periodic health check up, health appraisal screening tests for hearing, vision, IQ tests, etc.

- Promotive services - these can be general or routine, i.e., hygiene, physical exercise and balanced diet

Health instruction in the schools

This includes planned and directed health teaching. The program may include:

- Systematic classroom teaching
- Incidental health education
- Correlated and co-ordinated health education
- Preparation of Health education curriculum
- Community health education

Since the main mission of the school is imparting education, which can be used to develop the intellectual capacity to learn various facts and apply them to the ideal and real situation, school health instruction can be considered as the a core area of SHS.

Role of schoolteachers in SHS

- Recording height/weight/vision/hearing test at regular intervals.
- Daily observation of children with a view to spotting any deviations from normal health.
- To maintain health record of teachers and other health professionals and thus spread the message of healthy living in the community where they live and grow.
- A child who is not well cannot derive the full advantage of education imparted at school.
- Early detection of defects in growth and development, vision, hearing, speech, and behavioural problems; correction will help the child to overcome the handicap and thus contribute better to the community where he lives.

5.4. Adolescent Health Care

5.6.1. General Consideration

Adolescence is a period of transition between childhood and adulthood in which the body develops in size, strength, and reproductive capability. It is a period with abstract thinking and social relationships more from family base to a wider society. Adolescents

- Need Psychosocial support and material support
- Need opportunity and independent experiment and achievement

But the problem is to balance between support and opportunity

Adolescent Health care is a paradox. **Why?**

- Because this group is the healthiest group in **every society** and on the other hand it is highly suffering from problems related to behaviour.

There is an increasing interest in adolescent health care? **Why**

- Shift of attention from infectious cause to behavioural cause - relevance to adolescents.
- Changes in socio-cultural and demographic characteristics such as urbanisation, decreasing influence of extended family resulting in decreased traditional support and control system.
- Ease of social and sexual constraints and exposure to unhealthy situations and substances.
- Size of adolescents population
- Lengthening of adolescent period – wide range between individual's age of puberty and marriage.

Health problems of adolescents are related with problems during

- Infancy and childhood and
- Adolescence such as nutritional problems, physical stress, and pregnancy. For example nutrition need increases during adolescence and adolescent girls need more after they have started to have menstruation.

Health problems of adolescents is highly related with Behaviour which is voluntary. The major problems include:

- Unwanted pregnancy,
- Illicit abortion Adolescent pregnancy is one of the major causes of maternal mortality.
- Sexually transmitted diseases, and AIDS
- Drug and alcohol abuse
- Risk of accidents
- Risk taking behaviour (adventure)

These behavioural problems expose adolescents to

- Illness in later life
- Poor performance at school
- Suicide
- Sexual precocity

For Adolescent Health care

- Appropriate interaction needs knowledge of what constitutes healthy development
- They need services which will be sensitive to their needs
- Health promotive services or prevention and correction of problems has to be supported by policies and legislation in sections such as health, education, criminal justice youth, sports and culture, religious affairs etc.

CHAPTER SIX

Breast-feeding and Weaning Food

In prevention of diarrhea, especially among small infants breast-feeding plays the major and important role. Breast milk plays an important role in both the prevention and treatment of infant diarrhea. From a prevention viewpoint, breast milk provides a natural immunity and is generally safe from contamination. From a treatment viewpoint, breast milk, when given during ORT, helps provide extra water in addition to the salts in ORT, and helps restore the nutritional status of the child.

The increasing use of formula feeding by mothers, particularly in urban and semi urban areas is considered one of the leading causes of diarrhea, and malnutrition. Many mothers adopt formula feeding because of its flexibility and ease of use, freeing them to work. Others are convinced by the aggressive marketing campaign of commercial formula companies and by the appeal or modernity that bottle-feeding has come to represent.

Most poor mothers have no safe water to mix with the formula, and have problems to properly maintain bottle sterility, and often dilute the formula to make it last longer. These actions increase the likelihood of bacterial contamination and reduce the nutritional benefit of the product. As a response to this growth in improper bottle-feeding, a campaign has been launched worldwide to promote continued breastfeeding and to develop appropriate weaning foods for children.

Breastfeeding and bottle-feeding: advantages & disadvantages

Advantages of breast-feeding:

- Naturally suited to needs and digestion of infants
- Needs no preparation, less work for mother
- Ready on demand

- Inexpensive
- Clean
- Right temperature & concentration
- Contains protective elements for infant
- Infant benefits from cuddling and close contact with mother
- May delay conception, (however is not reliable as a contraceptive)
- Helps uterus of mother return to normal size

Disadvantages of breast-feeding:

- Severely malnourished mother who breastfeeds is depriving both herself and her child of vital nutrients.

Advantages of bottle-feeding

(These may not be advantages for the baby)

- Allows mother more independence, ability to work away from home
- Allows other members of family to feed child

Disadvantages of bottle-feeding:

- Formula is expensive
- Formula needs to be accurately mixed for adequate nutrition
- Takes preparation time
- Formula needs to be prepared using hygiene practices
- Baby is more susceptible to diseases & infections when bottles are contaminated
- Fuel needed for heating water
- Need adequate amounts of safe water to prepare formula and clean bottle
- More than one bottle is needed
- Need cleaning utensils and soap

Weaning Foods

It is generally held that "breast milk alone, from adequately nourished mothers, is sufficient food for infants up to six months of age. After six months, breast milk is a valuable supplement to weaning food.

The actual weaning period varies from one culture to another. Supplemental feeding can be introduced almost immediately after birth in some cultures. It is more common that at three to five months, mothers will start introducing weaning foods, yet in some cultures weaning may be delayed until the ninth or tenth month. In addition to identifying existing weaning schedules it will be necessary to look at the kind of weaning foods and the way in which they are prepared.

When discussing with mothers about weaning the following points has to be considered

- Cooking temperature which destroys bacteria
- Reducing the time between food preparation and child feeding
- Hand-washing before food preparation which will reduce bacterial
- Contamination
- Use of clean or boiled water when possible.
- Weaning food can be prepared from food items available at home

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