Entrance examination for post graduate of Master of Public Health.

Department of Community Health. Addis Ababa University

Section I-Bio-statistics

Mean? And one example: Mean is the sum of the observations divided by the number of observation. Example: The following data set of 10 numbers listed below:

3, 7, 2, 2,4,6,8,5,5,5. Then mean is $\frac{3+7+2+2+4+6+8+5+5+5}{10} = 4.7$

1. Properties of measures central tendency (mean, median, mode) and dispersion (Range, Variance and STD) and their computations?

PROPERTIES

The mean can be used as a summary measure for both discrete and continuous data; in general however, it is not appropriate for either nominal or ordinal data.

For given set of data there is one and only one arithmetic mean.

Arithmetic mean is easily to understand and easily to compute.

Algebraic sum of deviation of the given values from their arithmetic mean is always zero.

The arithmetic mean is greatly affected by the extreme values.

In grouped data if any class interval is open, arithmetic mean can not be calculated.

MEDIAN: When the observations arranged in increasing or decreasing order the median is middle observation. If the number of observations is odd, the median is = [(n+1)\2]

If the number of observations evens the median is the average of two middle (n/2) and [(n/2) +1]

If the number of observation is even, so that there is no middle observation, the median is defined as the average of the two middle observations. Example; the following list of numbers show. 3,7,2,2,4,6,8,5,5,5.In these set of data let arrange the number in increasing order. 2,2,3,4,5,5,5,6,7,8.So,Median= 5+5\2 =5

PROPERTIES

The median can be used as a summary measure for ordinal, discrete and continuous data; in general however, it is not appropriate for nominal data.

There is one median for a given set of data.

The median is easily to calculate.

Median is a positional average and hence it is not drastically affected by extreme values.

Median can be calculated even in the case of open end intervals.

It is not a good representative of data if the number of items is small.

MODE

An observation of a variable at which the distribution reaches a peak is called a Mode.

Example: Consider data set of ten numbers listed below.

3,4,2,2,6,7,8,5,5,5. In the above data set ,the mode is 5,because the value 5 occur three times(most frequent). The mode of grouped data, usually, refers to the model class, where the model class is the class interval with higher frequent. If a single value for the mode grouped data must be specified, it is taken as the mid point of the model class interval.

PROPERTIES

The mode can be used as a summary measure for nominal, ordinal, discrete and continuous data, in general, however, it is more appropriate for nominal, and ordinal data.

It is not affected by extreme values.

It can be calculated for distributions with open ended class.

Often it is values are not unique.

The main drawback of mode is it does not exist.

MEASURE OF DISPERTION

Range, Inter-quartile range, Variance, Standard deviation, and Coefficient of variance.

Define, properties, their computation and give one example for each.

Range is difference between the largest and smallest observation in data set.

Properties and uses

It determine only by the two extreme observations.
The use of range is limited because it tells nothing about how the data between extremes are spread.
Further, interpretation of the range depends on the number of observations.
When the number of observations increases, the range can get larger.

Examples and computation:

QUARTILES: Sets of values which divided the distribution into four parts such that there are an equal number of observations in each part.

$$Q1 = \left[\frac{(n+1)}{4}\right] \text{ Th}$$

$$Q2 = 2\left[\frac{(n+1)}{4}\right] \text{ Th}$$

$$Q3 = 3\left[\frac{(n+1)}{4}\right] \text{ Th}$$

Inter-Quartiles Range: It is difference between the 3rd and the first quartile.
Q3-Q1.
It is a useful descriptive measure,
It is mathematically intractable and can also vary considerably from sample to sample
Interquartile range also called five-number summary (minimum, Q1, median, Q3, and maximum).

Percentiles: It divided data into 100 parts of observations in each part.
It follows that the 25th the percentile is the first quartile, the 50th percentile is the median and the 75th percentile is the third quartile.

Variance: A good measure of dispersion
Should make use of all the data
Derived by combining in some way, the deviation of each observation from the mean

The variance achieves this by averaging the sum of the squares deviations from the mean.
The sum of the deviations from the main is zero.
It is more useful to square the deviations, and then, find the mean (to get variance).

Standard Deviation
Being the square of the deviations, the variance is limited as a descriptive statistics because it is not in the same units as in the observation.
By taking the square root of the variance we obtain measure of dispersion in the original units.
Coefficient of Variation
It gives relative variation
The best measure to compare the variability in two sets of data.
Standard deviation which calculated the absolute variation may lead to false results.

$$CV = \frac{\text{Standard deviation}}{\text{Mean}}$$

Never use SD to compare variability between groups which measures to use
When the distribution of the data is symmetric and unimodel (the data are approximately normal distributed).
It is useful to summarize the data using means and standard deviation.
When data is skewed, it is preferable to use the median and quartiles as summary statistics.
Median and quartiles are not easily influenced by extreme values in a skewed distribution unlike mean and standard deviation.
The mean and median of symmetric distribution is coinciding.
When distribution is skewed to the right, its mean is larger than its median.
When distribution is skewed to the left, its mean is smaller than its median.
Symmetric Distribution
Mean = Median =Mode

Example: Blood pressure and Birth Weight

The distribution is skewed to the right

Example: Rainfall in A.A

Mean >Median >Mode

The distribution is skewed to the left Example: 15- 49 years mortality rate

Mean <Median <Mode

A study done in a hospital showed that 30% of those who came from emergency reasons were aged 15 and less.

1. The variable of interest is Numeric.

2. The types of variable are Discrete.

3. the most important measure of central tendency is Mean.

Given crude death rates in form of villages, which of the villages has the largest number of deaths?

	I	II	III	IV
Villages				
No of population	50,000	100,000	250,000	200,000
Crude death rate per 1000	10	12	8	9

.....

A. I B.II C. III D.IV E. All have the same number of deaths.

5. The following are survival times in months recorded for six tumor-bearing ages 1, 1.4, 1.7, 2.3, 2.5, and 3.8.If observed values of 3.8 months is mistakenly recorded as 38 months the effect will be an increase in the:

A. mean B. inter_quarter range C.mode D. Median E.A and B

Question 6and 7 are based on the following Information.

Receit for diastolic blood pressure (DBP) for 1,500 males ages 30_69 are showing in the table. The mean DBP 84 mm/HG.

DBP mm/HG	Frequency
<65	60
65_74	270
75_84	540
85_94	420
95__104	150
105_114	45
>115	15

6. Those with DBP 95 mm/HG or above were considered to be hypertensive. Thus hypertensive men felt

a. above the 86th percentile b. below the 14th percentile

c.below the 86th percentile

7. The distribution of DBP for 800 females in this population is nearly symmetric with the same standard deviation as that for the males. The mean for females was 79 mmHg. Thus we may conclude:

a. the median will be the same for both sexes b. the proportion that are hypertensive is the same for both sexes c. the variability of DBP is higher for females d. the variability of DBP is smaller for fameless e.none

Questions 8 and 9 are based on the following information.

The birth rates of countries in the world follow a normal distribution. The mean birth rates were about 25 with standard deviation of 10 per 1000 population. Write True or False to the following statements.

1. What is probability sampling?

Sampling is a process of choosing a section of the population for observation and study.

There are two broad categories of sampling procedures: ***probability*** methods and ***non-probability*** methods.

In probability sampling, every individual (element) in the defined source of population may be selected into the sample *with a known (non-zero) probability. Let sampling frame be N & sample size be n. Every individual has a known chance of n/N being selected*

.tends in practice to be characterized by the use of lists or *sampling frame* and clearly defined sample selection procedures. Estimates of population characteristics derived from studies based upon probability sampling methods may be expected to approximate the "*true*" population value (parameters like proportion, mean, OR, RR etc.) within a specified margin of error. .

Hierarchy of sampling (vocabulary Sampling)

Study subjects

The actual participants in the study

Sample

Subjects who are selected

Sampling Frame

The list of potential subjects from which the sample is drawn

Source population

The Population from whom the study subjects would be obtained

Target population

The population to whom the results would be applied

Non-probability sampling is not based upon the statistical principles which govern probability sampling.

Simple Random Sampling

- Each individual in the frame has equal chance of being selected
  - Use of lottery
  - Use of random numbers
  - Use of computer programs to generate random numbers
- Advantages of simple random sampling:-
  - No bias i.e. no tendency to have too high or too low statistic when you take many samples. Bias is consistent, repeated

deviation of the sample statistic from the population parameter in the same direction.

- Small variability (of the values of the statistics from sample to sample).

Systematic Sampling

Every k th individual in the frame is selected for inclusion in the sample

k is sampling interval (standard distance between individuals) obtained dividing the number in the frame by the sample size

Systematic sampling involves a danger if the list of individuals has some periodicity or some pattern

- Advantages of SS: - Require no frame, Easier to perform it, Very good when the population from which sample is to be drawn is homogeneously distributed, & Make geographical spread certain if the units are in “geographical” order.
- Disadvantages; patterns/periodicity…

Stratified Sampling

- Sampling error is reduced by two factors
    1. Large sample size produces smaller errors than do small samples
    2. Homogeneous population produce smaller errors than heterogamous population

Stratified sampling is based on the assumption that the second factor ensures samples are drawn from homogeneous population The choice of stratifying variables depends on the investigator (variables you want to represent accurately)

Cluster Sampling

Involves selection of groups called clusters followed by selection of individuals within each selected cluster. Can be used when it is either impossible or impractical to compile exhaustive list of individuals of the target population. Cluster sampling is recommended for its efficiency; however accuracy is less because it is subject to more than one sampling error unlike SRS

Multistage cluster sampling

- Multistage cluster sampling then involves the repetitions of two basic steps the listing and sampling. List primary sampling units, then sample of those units is selected by using simple random sampling method. List secondary sampling units, then sample of those units is again selected by SRS,So forth. Finally Sample size will be calculated by multiplying by the number of stages used (which we call the design effect).

Sampling frame: Sampling frames are an integral part of probability sampling.

- Developing a sampling frame: is determining whether and where members of the particular group tend to gather, identify location

and estimate sizes of these potential target group that serve as a sampling frame for the main survey, Household surveys and institutional based surveys are simple or readily available for developing sampling frame,. However in looking at subgroups that are hard to reach, sampling frame development requires preliminary qualitative research.

Developing sampling frame: Creating lists of sites, Sketching specific geographic area, creating lists of members of the target group, Estimating sizes of these potential target groups, interviewing key informants, Spending time or observation by walking through the community, reviewing records such as census, DHS data, health services reports, school registers, geographical data etc, and discussion with experts and program managers involved in the target group

Non-probability sampling: In general they do not produce "*representative*" data for larger population, they are cheaper and easier and used in situations where probability sampling methods are not feasible, because it is not possible to construct adequate sampling frame (e.g Animal studies).Good for pretests, pilot studies, In-depth interviews, precise representative ness is not necessary (e.g. to develop sampling frame at initial design of the survey, pilot studies, epidemic investigation, political polls etc). ***Purposive***

(Judgmental): Selection of subjects on the basis of your knowledge of the population, its elements and the nature of the research objective

Convenience **(Reliance)** :Selection of a sample based on easy accessibility

- friends, workmates. Voluntary response sample; choose it self by responding to a general poll or a general appeal (e.g. written or call in opinion polls).

Quota*:* selection of samples based from groups cased on a fixed quota.

In general these are examples of un acceptable/ biased sampling methods.

How large a sample: *Too large: Unnecessary involvement of extra subjects, High cost, Time constraints, Too Small, Not able to show biological/social effect and False conclusion*

The main determinant of the sample size is how accurate the results need to be. It is much better to increase the collection than to increase sample size after a certain point. It is better to make extra efforts to accuracy of data get a representative sample rather than to get a very large sample. Probability samples while never perfectly representative, are typically more representative. They need not however to be representative in all aspects. Representation in sampling is limited to those characteristics that are relevant to the substantive interests of the study.

Exercise

Describe the sampling method you would use in

Each of the following cross sectional surveys

and indicate the potential sources of sampling

bias in each case

- *Immunization coverage in infants in |Nazareth town*
- *Prevalence of HIV in pregnant women in your region..*

What is p-value? The outcome of performing a hypothesis test is to produce a ***p-value***. It is the probability of rejecting the null hypothesis while it is true. A large p-value implies that the probability of the value observed, or one or more extreme, occurring just by chance is low, when the null hypothesis is true. That is, a small p-value suggests that there might be sufficient evidence for rejecting the null hypothesis. But for what values of p-value should we reject the null hypothesis? By convention, a p-value of 0.05 or smaller is considered sufficient evidence for rejecting the null hypothesis. By using p-value of 0.05, **we are allowing a 5% chance of wrongly rejecting the null hypothesis when it is in fact true.** When the p-value is less than or equal to 0.05, we often say that the result is ***statistically significant.***

What is power of a test? Measuring the differences between group means.

Statistical methods for Categorical variables: Chi-squared Test, Measures of association, Logistic Regression

What are elements for chi-square test? The chi-squared (χ**2**) test statistics is widely used in the analysis of contingency tables. It compares the actual observed frequency in each group with the expected frequency (the later is based on theory, experience or comparison groups).The chi-squared test (Pearson's χ2) allows us to test for association between categorical (nominal!) variables. The null hypothesis for this test is there is no association between the variables. Consequently a significant p-value implies association. What is the assumption for chi-square test? Data must be categorical /must be categorized. The data is a frequency data (counts for frequency, proportions /difference of proportions for prevalence & incidence).The chi-squared test assumes adequate sample size -that the numbers in each cell are 'not too small'. No expected frequency should be less than 1, and no more than 20% of the *expected* frequencies should be less than 5.If some numbers are too small, row or column variables categories can sometimes be combined to make the expected frequencies larger or use Yates correction, the Fisher's exact test should be used instead. It assumes that measures are independent of each other i.e. the categories created are mutually exclusive. The χ2 - test assumes that there is/must exist theoretical basis for the categorization of the variables. This is to ensure that the analysis will be meaningful and prevents "fishing expeditions."

Measures of association

The chi-square test tells us whether or not an association exists. It is useful however, to know how strong the association is. The ***relative risk and the odds ratio*** are appropriate measures of the strength of the association.

The ***relative risk***: As its name implies, ***relative risk*** **(RR)** is simply the risk of getting the disease when the factor is present relative to the risk of getting the disease when the factor is absent.

Consequently RR is calculated as:

RR = Probability of getting the disease when the factor is present

Probability of getting the disease when the factor is absent

Odds Ratio: Confidence intervals for relative risk or odds ratio can also be calculated. A 95% confidence interval includes one implies no significant association between the factor and the disease at 5% level. These definitions extend easily to the 2 X k contingency tables, where the factor has k levels. The relative risks and odds ratio are calculated using the factor at level 1 as the reference level as shown in Table 13 below. However, any level can be used as a reference in the interest of the researcher.

Properties, uses, and computations of chi-square test, correlation and regression?

2. Properties and applications of normal distributions-distribution and probability calculation?

The normal distribution is used extensively in the analyses of continuous variables and has an especially important role in statistics. It has been found to be a good approximation for many distributions that arise in practice. The normal distribution is a unimodel and symmetric.

The normal distribution is completely described by two parameters, referred as the mean μ (read as ‘mu’) and standard deviation σ (read ‘sigma’). The mean μ can be any number (negative, positive or zero).The standard deviation σ must be a positive number.

The mean μ defines the location of the distribution and the SD (standard deviation) σ defines the dispersion of the distribution about the mean. For any normal distribution, -about 68% (most) of the observations is contained within one SD of the mean. about 95% (majority) of the probability is contained within two SDs and 99% (almost all) within three SDs of the mean..

The standard normal distribution: Since a normal distribution could be an infinite number of possible values for its mean and SD, it is impossible to tabulate the area associated for each and every normal curve. Instead only a single curve for which μ = 0 and σ = 1 is tabulated. The curve is called the *standard normal distribution (SND*

Classical Probability: The probability of an event is the event's long run relative frequency in repeated trials under similar conditions. OR, the probability of any outcome of a random phenomenon is the proportion of times the outcome would occur in a very long series of repetitions.

E.g. the probability of the occurrence of a head tossing a coin is 0.5.

- Relative frequency probability: If some process is repeated a large number of n times, and some resulting event E occurs m times, the relative frequency of E (m/n) will be approximately equal to the probability of E. Symbolically: Pr(E) = m/n. E.g. Suppose that of 158 people who attended a dinner party, 99 were ill due to food poisoning. The probability of illness for a person selected at random is Pr (illness) = 99/158 = 0.63 or 63%
- Randomness. We call a phenomenon random if:-The exact outcome is not predictable in advance. Nonetheless, there is a predictable long term pattern that can be described by the distribution of outcomes of very many trials.

Subjective probability: measures the confidence or a wish that a particular individual has in the truth of a particular proposition.E.g. If some one says that he is 95% certain that a cure for AIDS will be discovered within 5 years, then he means that Pr(discovery of cure of AIDS within 5 years) = 95%.Although the subjective view of

probability has enjoyed increased attention over the years, it has not been fully accepted by scientists.

Properties of probability: Given some experiment (process) with n mutually exclusive (do not occur simultaneously) outcomes (called events) E1, E2, …En the probability of any event Ei is a non negative number Pr(Ei) ≥ 0.The sum of the probabilities of all mutually exclusive outcomes is equal to one Pr(E1) + Pr(E2) + … + Pr(En)=1.The probability of the occurrence of two mutually exclusive events Pr(Ei or Ej) = Pr(Ei) + Pr(Ej).If the two events are not mutually exclusive then

Pr (Ei or Ej) = Pr (Ei) + Pr (Ej) - Pr (Ei n Ej).The probability of a complement of an event E is Pr (E') = 1–Pr (E)

Conditional probability

- Sometimes the set of all possible outcomes may constitute a subset of the total group. In other words the interest is determining the probability that an event A will occur, given that another event B has already taken place.
  - E.g. Pr(a person <u>living 65 years</u> given that <u>he is 60</u>)

Symbolically Pr (A\B)

Multiplication Property: both A & B occur are depend each other.

Pr (A and B) = Pr (A∩B) = Pr (A) × Pr (B\A) = Pr (B) × Pr (A\B)

$$\Pr(B\backslash A) = \frac{\Pr(A \cap B)}{\Pr(A)} \qquad \Pr(A\backslash B) = \frac{\Pr(A \cap B)}{\Pr(B)}$$

If the two events are independent (i.e. the occurrence of A has no effect on the occurrence or non occurrence of B) then Pr (B\A) = Pr (B) and Pr (A\B) = Pr (A). Therefore Pr (A∩B) = Pr (A) × Pr (B)

Probability distribution: The term ***probability distribution*** or just ***distribution*** refers to the way data are distributed, in order to draw conclusions about a set of data.

The Poisson distribution: The Poisson distribution is used to model discrete events that occur infrequently in time and space i.e. rare events that occur in constant rate, example death rates, and accident rates.

Characteristics of a distribution

- Features commonly used to describe a distribution are location, dispersion, modality and skew ness.
  - ***Location*** tells us something about the average value of the variable.
  - ***Dispersion*** tells us something about how spread out, the values of the variable are.
  - ***Modality*** refers to the number of peaks in the distribution.
  - ***Skew ness*** refers to whether or not the distribution is symmetric

- A distribution is said to be symmetric if it is symmetrically distribute about its mode.

Correlation and Regression

Objectives

- To investigate relationship that may exist among continuous variables
- To predict or estimate the value of the response that is associated with a fixed outcome of explanatory variable
- To investigate more complicated relationship among different variables

Correlation

- As OR and RR are used to quantify risk between two dichotomous variables, **Correlation** is used to quantify the degree to which two random continuous variables are related, provided the relationship is linear.

Simple linear regression

- Like correlation analysis, simple linear regression is a technique that is used to explore the nature of the relationship between two continuous variables

- The primary difference between the two methods is that regression enables us to investigate the change in one variable called the response, which corresponds to a given change in the other known as the explanatory variable.
- Correlation analysis does not make such distinctions (i.e. the two variables involved are treated symmetrically)
- The ultimate objective of regression analysis is to predict or estimate the value of the response that is associated with a fixed outcome of explanatory variable.

Logistic regression

As with linear regression, the intention of performing a *logistic regression* is to explain the dependent variable in terms of the explanatory or independent variables.

In linear regression the dependent variable is numeric and normally distributed.

In logistic regression, the dependent variable is categorical; in particular, the dependent variable is dichotomous.

Entrance Exam for post graduate MPH students.
Awassa University, 2007

Nutrition Question
What is importance of malnutrition as an underlying factor in < 5 children?

1. Diarrhea Disease
2. ARI
3. Measles
4. Malaria
5. Perinatal complication & other

- Adolescent pregnancy and child birth

- ❑ Major risk factor for both mother and child,

Low birth weight, Toxemia, Hemorrhage, Anemia, Infection, Obstructed labor, and prenatal mortality

Major causes of maternal mortality

1. Hemorrhage
2. Sepsis
3. Abortion
4. Hypertensive disorder in pregnancy
5. Obstructed labor

1. Discuss the difference between food security and nutritional security?

Food security consider: Availability of food, National, Regional.

Determinants: Production, stocking

Poor households food security: seasonal variation, prices

Amount in the market

Labor patterns

Market price

Wages

Individual Stress

Nutritional status

Morbidity and mortality

Social Stress

Migration. Food Insecurity can be Chronic and cyclical

Dimensions of food insecurity

Three dimensions)

- ✓ Sufficient supply
- ✓ Stability supply
- ✓ Access

Dimensions of food security problems

- ✓ Self-sufficient and inefficient system
- ✓ Food defiant and efficient system

Different types of food insecurity in Ethiopia

. Chronic food insecurity

. Transitory food insecurity

. Temporary food insecurity

. Cyclical (seasonal) food insecurity

Food Security Indicators

Multiple indicators

- **Some of the most commonly used types of indicators**
  - ☺ **Food production**
  - ☺ **Income**
  - ☺ **Total expenditure**
  - ☺ **Food expenditure**
  - ☺ **Share of expenditure on food**
  - ☺ **Calorie consumption**
  - ☺ **Nutritional status**

2. Write and discuss at least three UN – Millennium development goals related with nutrition.

1._Eradicate poverty and hunger

-Reduce by half the proportion of people living on less than a dollar a day.

-Reduce by half the proportion of people who suffer from hunger.

2. Achieve universal primary education.

- Ensure that all boys and girls complete a full course of primary schooling.

3. Promote gender equality and empower women.

- Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015.

4. Reduce child mortality.

- Reduce by two thirds the mortality rate among children under five.

5. Improve Maternal Health

- Reduce by three quarters the maternal mortality ratio.

6. Combat HIV/AIDS, Malaria, and other diseases.

Halt and begin to reverse the spread of HIV/AIDS.

Halt and begin to reverse the incidence of malaria and other major diseases

7. Ensure environmental sustainability.

- Integrate the principles of sustainable development into country policies and programmers; reverse loss of environmental resources.

- Reduce by half the proportion of people without sustainable access to safe drinking water.

- Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020.

8. Develop global partnership for development.

3. Write and discuss the prevention of HIV transmission from mother to child concerning about nutrition? 11.Use Formula Milk 2. To breastfeed her child 3.To give for a care taker (HIV –ve)

4. What are strategies of nutrition actions on major micronutrient deficiency?

- Dietary Improvement
- Food fortification
- Supplements with iron tablets
- Public health Measures
  - Birth spacing
  - Control of parasitic infections
  - Immunization to prevent infection
  - Improved water supply and sanitation

Knowledge, awareness, what must practices of each points and Interventional measures mentioned above should be looked through for each stake holders

5. What is optimal breast feeding? It is a combination of Exclusive breastfeeding (only breast milk until 6 month) & Supplementary feeding

6. Write the basic underlying and immediate determinate of nutritional status?

Underlying causes

Inadequate care for children and women,

Insufficient health services and unhealthful environment,

Inadequate access to food,

Immediate causes

- **Inadequate dietary intake**
- **Weight loss, growth faltering,lowered immunity & Mucosal damage**
- **Disease – Incidence, severity, duration**
- **Apetite loss,nutrient loss,malnutrition,altered metabolism**

7. What are the three major basic micronutrient deficiencies in Ethiopia?

Iodine deficiency disorders, Vitamin A deficiency, Iron deficiency anemia

8. Why women in the reproductive age are mainly affected by malnutrition?

a. List four nutritional problems of public health importance in Ethiopia?

Protein-energy malnutrition,

Iodine deficiency disorders,

Vitamin A deficiency,

Iron deficiency anemia, and varying combinations

b. List four nutritional interventions that are applicable in Ethiopia?

c. State the cut-off point applied to identify low birth weight (cut off point for low birth weight, its determinates (causes) and effect?

d. Discuss growth monitering and the Ethiopian situation (what is use of growth monitering and promotion/how effective is it in Ethiopia?

e. what is nutritional surveillance and its purpose, how it practiced in Ethiopia, what is source of data, who are involved in Ethiopia

f. Longdinal vs cross-sectional?

Nutritional assessment

Definition: interpretation of information obtained from dietary, biochemical, anthropometric and clinical studies. information is used to determine the health status of individuals or population groups as influenced by their intake and utilization of nutrients.

Nutritional Assessment Systems

Forms:

1. Surveys
2. Surveillance
3. Screening

1. Nutrition Surveys

Cross-sectional survey

Objectives

- establish baseline nutritional data (most efficient approach for initial analysis),
- ascertain overall nutritional status of a population,
- identify and describe population groups ‘at risk’ to chronic malnutrition,

- describe extent of existing nutritional problems and health parameters,

Application: Information may be used to;

- allocate resources,
- formulate policies to improve nutrition,

Limitations

- less likely to identify acute malnutrition,
- unable to establish the possible causes of malnutrition

2. Nutrition Surveillance

- Continuous monitoring of nutritional status of selected population groups,
- Data collected, analyzed and utilized, for an extended period of time (longitudinal studies),
- Focus on specific at-risk subpopulation groups,
- Continuous watching
  - factors responsible for the nutritional status of populations
  - early existence of inadequate nutrition

Objectives

- identify possible causes of malnutrition,
- formulate, and initiate intervention measures,
- evaluate effectiveness of nutrition programs,
- promote decisions concerning priorities and the disposal of resources,
- formulate predictions on the basis of current trends,
- Identifying malnourished individuals requiring intervention,
- Comparison of an individual's measurements with predetermined risk levels or 'cutoff' points,
- Carried out at the individual level as well as on specific at-risk subpopulations,

Broad scope:

- overlaps with health & epidemiologic al surveillance
- cannot be readily separated from related disciplines ; economic, social, & agricultural studies

Surveillance requires:

- Regular data collection from populations specifically for surveillance from available sources, or both.

Applications of Nutritional surveillance

Uses - Health & development planning

- Program management & evaluation
- Timely warming & intervention

Uses in Programs

Assist panning - implementation

- management
- Evaluation

Use policy & Planning - resource allocations for specific programs or projects

- Legislation (e.g. food price controls, etc.)
- import, export of food
- production of cash- crops Vs food-crops

Use in early warning systems- Special application of nutritional surveillance to assist the prevention of acute food shortages due to: crop failure, economic decline

- Predisposing factors: *severe poverty in populations susceptible to acute emergencies such as drought or war*
- Surveillance should provide staged signals timely sequential interventions and prevent or modify undesirable increases in malnutrition

Ethiopia: Established a food and nutrition surveillance system with the (see pp 3-4 of separate copies from Endris)

Advantages & disadvantages

- carried out for at least one year
  - annual incidence of malnutrition and disease
  - seasonal variations
    - climate
    - availability of food
    - community activities
- Incidence of severe acute diseases
  - Diarrhea
  - Respiratory infections

} can be correlated; -with one another

- Measles -with environmental changes

Cross-sectional prevalence surveys: - miss most of the acute conditions
- tend to over emphasize chronic diseases

Longitudinal studies: - permit an understanding of the dynamic interplay of different factors
- enable identification of: locally important causes of malnutrition
- Logically preventive programs
- not easy to organize
- inevitably very expensive
- time-consuming to undertake , analyze, present to appropriate authorities for action

g. Who is responsible in doing so in Ethiopia?

Describe the relationship between infant mortality rate and nutrition? Discuss Vitamin A campaign strategies?

Health Education

1. Define communication. To communicate means (dictionary definition) "to impart, pass on or transmit a message, information, etc.; to exchange ideas or information with, be in touch with, to have access, to be connected with," and communication means "the act of communication, the things communicated, the means of communicating."

Essentially communication deals with transmission of information or ideas and sharing and exchanging of information.

2. Communication process. The process of communication is usually described by models with three distinct parts and their elements. The are: **(1) Sender** or **communicator**; **(2) the receiver** of the message or the **communicatee**; **(3) the message** which lies between the communicator and the communicatee and gets transacted.

In other words, communication is a process by which an idea is transferred from a ***source*** to a ***receiver*** with the intent to change his behavior. The purpose of communication is change.

The six components of any communication process are:

1. **Source (Encoder)**:
2. **Message:**

Effectiveness of the message depends on:

1. Psychological factors: intelligence, level of education, prior information, and selective perception.
2. Linguistic factors: vocabulary, grammar, etc.
3. Receiver factors: culture, class, etc.

3. **Channel**: Physical means by which a message travels from source to receiver.

Classification of channels

(1) Interpersonal (face to face)
(2) Mass media

4. **Receiver(Decoder):**
5. **Effect:** change in receiver's attitude, knowledge and practice.
6. **Feedback**.

MODELS OF COMMUNICATION

1. Aristotle model (1946)

It consists of three elements only: **the speaker (source or communicator)**, **the speech (message)**, and **the audience (receiver or communicatee**

2. Shannon and Weaver model

Source_ transmitter_ Signal_ Receiver; and Destination

The **parts of the medium** are the transmitter and the receiver. The common application of this model is the radio transmitter or telephone mouthpiece.

3. Schramm mode:l This model has in addition to the previous model a process of coding the message at the source (communicator). The message is put in the form of code or encoded. It is then transmitted as a signal or energy form through a medium in the form of wires. This medium is called the **channel**. The communicatee in this model is the receiver who decodes the message that has been received.

For this purpose the communicator is to employ an encoder who converts the message into code. This is what happens in the telegraph office when the telegram is handed.

4. Berlow mode: This is not different from the previous model. The application is also seen in telegraph.

5. Leagans model: components are **communicator, message, channel, treatment, audience and audience response.** In this model, **feedback** mechanism is provided in the communication process.

6. Fano model

The components of this model are **source, source encoder, channel, encoder, channel, channel decoder, user decoder, and users**.
This model is typically exemplified by the telegraph system in which

the Morse code and any other code

6. Literer's model

The components in this model are **selection, encoding, transmission, channel, noise, detecting, decoding, and selection.**

7. Westly-Maclean's model

The components of the model are **sender, encoding, channel, decoding, receiver, and feedback.**

The model is applicable in the following situations: **face to face communication, correspondence, telephonic conversation, wireless conversation, and lecture discussion, panel discussion forum.**

C. FACTORS AFFECTING THE COMMUNICATION PROCESS

1. **Source or the sender or the communicator**

The communicator has to be intelligent and understanding. He should know the need of the audience. He should have proper judgment.

The communicator should possess the following characteristics:

a. Skill in communicating - verbal, written. Including treatment of message, etc.
b. Knowledge of the channel and audience.

c. Attitude towards the subject (topic), channel and audience.
d. Source credibility
e. Skill in encoding and decoding
f. Skill in utilizing the channel
g. Confidence or attitude towards self.

2. Message

A message is the information, which a communicator wishes the audience to receive, understand, accept or act upon. Message will, therefore, consist of statements made verbally during conversation or transmitted through any media.

The message has 3 dimensions or parts:
1. The code
2. The content
3. The treatment

3. Channel

In general, there are three aspects of communication:
a. Encoding and decoding of message
b. Message vehicle - sound waves, electrical wave, etc.
c. Vehicle - air, wire, microphone, radio, etc.

4. Selection of channels

5. Audience or receiver

PRINCIPLES OF COMMUNICATION

The perception of the sender and receiver should be as close as possible to each other

For effective communication there should be involvement of more than one sensor organ for giving a cumulative effect. . A communication in which there is an opportunity for the different sensory organs to participate is much more effective than when there is a lesser number of sensory organs involved.

The more the communication takes place face-to-face the more is its effectiveness

Any communication without two way process is less effective because of the lack of opportunity for concurrent, timely and appropriate feedback

What are the pre-requisites for effective communication?

A. Communicator: The communicator should possess the following characteristics.

1. He/she should be knowledgeable and fully conversant with the subject under discussion.

2. He/she should have credibility before the receiver, which is gained by sincerity, honesty and intellectual capability.
3. The communicator need to have proper communication skill and should have skill in selecting and using the channel.
4. The communicator should have proper attitude towards the receiver and the subject matter.
5. Feedback should be ensured.

B. Message: The message content should be brief and clear.

1. It should be need-based and timely and appropriate or relevant.
2. It should be supported by factual material to give it proper authenticity.
3. The channel should be manageable by the communicator and should be appropriate.
4. Treatment of the message is also important. Its purpose is to make the message clear, understandable and realistic and specially situated for the channel or media that has been selected.
   Some of the salient principles in treatment of message for effective communication are as follows: (a) proper emphasis where required; (b) repetition for the sake of emphasis; (c) contrast of ideas and comparisons; (d) logical sequence; (e) redundancy for reduction of noise; and (f) no entropy, i.e., wastage or loss of information due to uncertainty or lack of clarity. Entropy is the opposite of redundancy.

C. Channel

1. It should be familiar both to the communicator and communicatee.
2. It should be appropriate to the message.
3. It should be available and accessible.

D. Receiver

1. Like the communicator the receiver also should have proper attitude and the desire to receive the communication.
2. The receivers' sensory organs should be intact and in good working conditions.

In general, effective communication can be considered from three important purposes. With regard to the effect it should be able to answer specifically in the communicatee as well as the communicator, the three aspects, i.e., (a) what a particular idea or thing is, (b) why it should be so, (c) how it can be done. The "what" portion gives the change in the knowledge level by supplying the necessary information and ideas. The "why" gives the support for change of attitude and "how" provides the solution and therefore, brings about the change in behavior.

. When the entire community at large has to be contacted simultaneously, one has to resort to **MASS MEDIA**. The communication that is aimed to reach the masses or the people at large is called **mass communication.** In the present day the commonly used mass media amicrophones or public address systems, radio, cinema, television, newsprint, posters, exhibitions, etc.

Barriers of communication:

-failures in the planning process to apply epidemiological and behavioral

sciences to the selection of appropriate objectives

-communication failure in reaching the intended audience and promoting understanding and acceptance of messages

-failure in the organization of health education services and the weak status of the specialist health educator

-failure in the evaluation process and the dissemination of research into decision making

educational methods

a. FORMAL PRESENTATION METHODS Lecture or speech, Dialogue, Symposium, Panel discussion Colloquy and Forum

3. Write about predisposing, motivating and reinforcing factors in cigarette smoking on any other behavior. (What are the impacts of predisposing, enabling and enforcing factors on health behavior?

HEALTH PROMOTION PLANNING MATRIX - PRECEDE-PROCEED MODEL

Health Promotion Programs operate either at primary (hygiene and health enhancement), secondary (early detection) or tertiary (therapeutic) stages of prevention, it may accurately be seen as an intervention whose purpose is to short-circuit illness or enhance quality of life through change or development of health related behavior and conditions of living. The **PRECEDE** framework (*p*redisposing, *r*einforcing and *e*nabling *c*onstructs in *e*ducational / *e*nvironmental *d*iagnosis and *e*valuation) takes into account the multiple factors that shape health status and helps the planner arrive at a highly focused subset of those factors as targets for intervention. PRECEDE also generates specific objectives and criteria for evaluation. The **PROCEED** framework (*p*olicy, regulatory and *o*rganizational *c*onstructs in *e*ducational and *e*nvironmental *d*evelopment) provides additional steps for developing policy and initiating the implementation and evaluation process.

PRECEDE-PROCEED works in tandem, providing a continuous series of steps or phases in the planning, implementation, and evaluation process. The identification of priorities and the setting of objectives in

the PRECEDE phases provide the objects and criteria for policy, implementation, and evaluation in the PROCEED phases.

PRECEDE-PROCEED is a robust model that addresses a major acknowledged need in health promotion and health education: comprehensive planning. The PROCEED component of the model is of more recent inception and has head less exposure and testing. It is essentially an elaboration and extension of the administrative diagnosis step of PRECEDE, which was the final and least developed link in the PRECEDE framework. There are eight phases of the PRECEDE-PROCEED model

PRECEDE

Phase 1. Social diagnosis - quality of life
Phase 2. Epidemiological diagnosis - health status indicators
Phase 3. Behavioral and environmental diagnosis
Phase 4. Educational and organizational diagnosis - predisposing, reinforcing and enabling factors
Phase 5. Administrative and policy diagnosis - Health promotion, health education, policy regulation organization

PROCEED

Phase 6. Implementation (Phases 4 & 5 of PRECEDE)
Phase 7. Process evaluation (Phases 3 & 4 of PRECEDE)
Phase 8. Impact evaluation (Phases 3 & 4 of PRECEDE)
Phase 9. Outcome evaluation (Phases 1 & 2 of PRECEDE)

The PRECEDE model groups them according to the educational and organizational strategies likely to be employed in a health promotion program to bring about behavioral and environmental change. The three broad groupings are predisposing factors, reinforcing factors, and enabling factors.

Predisposing factors include a person's or population's knowledge, attitudes, beliefs, and perceptions that facilitate or hinder motivation for change. These are those antecedents to behavior that provide the rationale or motivation for the behavior.

Enabling factors are those skills, resources or barriers that can help or hinder the desired behavioral changes as well as environmental changes. They can be viewed as vehicles or barriers, created mainly by societal forces or systems. Facilities and health insurance, and laws and statutes may be supportive or restrictive. The skills required for a

desired behavior to occur also qualify as enabling factors. Enabling factors thus include all the factors that make possible a desired change in behavior or in the environment. Enabling factors are the antecedents to behavior that enable a motivation to be realized.

Reinforcing factors, the rewards received, and the feedback the learner receives from others following adoption of the behavior, may encourage or discourage continuation of the behavior. Or in other words, reinforcing factors are factors subsequent to a behavior that provide the continuing reward or incentive for the behavior and contribute to its persistence or repetition.

The fourth phase of the PRECEDE consists of sorting and categorizing the factors that seem to have direct impact on the target behavior and environment according to the three classes of factors just cited. Study of predisposing, enabling and reinforcing factors automatically takes the planner on to decide exactly which of the factors making up the three classes deserve highest priority as the focus of intervention.

Any plan to influence behavior must consider all three sets of causal factors. For example, a program for disseminating health information to increase awareness, interest, and knowledge (predisposing factors) that does not recognize the influence of enabling and reinforcing factors, most likely will fail to influence behavior except in the segment of the population that has resources and rewards readily at hand (usually the more affluent people).

Normally we expect the sequence to be as follows: A person has an initial reason, impulse, or motivation (predisposing factor) to pursue a given course of action. This first factor (arrow 1) in the causal chain may be sufficient to start the behavior, but it will not be sufficient to complete it unless the person has the resources or skills needed to carry out the behavior. The motivation is followed by (arrow 2) deployment or use of resources to enable the action (enabling factor). This usually results in the behavior, followed by (3) a reaction to the behavior, which is emotional, physical, or social (reinforcing factor).

Reinforcement strengthens behavior (4), future resources (5), and motivation (6). The ready availability of enabling factors provides cues and heightens awareness and other factors predisposing the behavior (6). An exercise in your home is more likely to prompt you to use it than one at the YMCA. Similarly, rewards and satisfactions from behavior make that behavior more attractive on the next occasion; today's reinforcing factor becomes tomorrow's predisposing factor (7) (transparency, page 153).

4. What is the similarity and difference between health promotion and health education?

Health Education: A process with **intellectual, psychological and social dimensions** relating to activities that increase the abilities of people to make informed decisions affecting their personal, family and community well-being. This process based on scientific principles, facilitates learning and behavioural change in both health personnel and consumers, including children and youth.

Health Promotion:

It is any combination of health education & related organizational, economic & environmental supports for behavior of individuals, groups, or communities conducive to health (has social context). It is the science and art of helping people change their life toward a state of optimum health.

Health Behavior:

These are actions of individuals, groups & organizations as well as their determinants, correlates, & consequences, including, social change, policy development and implementation, improved copping skills, & enhanced quality of life.

6. Not parameters of effective communication. a. face to face

b.provision for feedback. C.Desinged based on a study d.application of

multiple tools. E. all e.none

7. Behavioral health research will employ one of the following

streams.

a. applied b.operational c.problem solving d.qualatitive e.quantative

f.triangulation. g.a and f are correct. g. a to c are correct i.all are

correct

Qualitative research is a type of *formative research* that offers specialized techniques for obtaining *in-depth responses about what people think and how they feel*. It enables program management to gain insight into *attitudes, beliefs, motives and behaviours of the target population*. .

The two primary qualitative research techniques are:
1. individual depth interviews, and
2. focus group discussions.

Use of qualitative research

- identifying problems in ongoing intervention and suggesting appropriate solutions to those problems
- complementing quantitative data collected in routine monitoring and evaluation studies, by helping to interpret quantitative results
- designing more valid survey instruments by identifying topics for which survey research is most appropriate, and by identifying relevant questions and their appropriate wording.

- exploring health problem or issue which little is known about it
- identifying local perceptions of health and development priorities
- identifying relevant interventions strategies and target populations
- investigating the feasibility, acceptability and appropriateness of potential new health programs
- developing appropriate information, education and communication (IEC) activities and materials

Qualitative vs quantitative research methods

- **Quantity refers to measures like “how much” and how large the amount of some thing.**
- **Four basic types of measurements are stated in textbooks as nominal, ratio, interval and ordinal.**
- **Qualitative uses only nominal as either/or and ordinal as low, medium and high**
- **In contrast qualitative researches have the opportunity to spend more time in a community, thereby developing rapport and identifying potential sources of contextual bias.**
-
- **The flexibility of qualitative research allows the researcher to reduce contextual bias by using interviewing techniques and creating an interview environment in which respondents feel most comfortable.**
-
- **qualitative research can facilitate quantitative research by identifying topics which are appropriate for the survey methods**
- **quantitative research can be used to facilitate qualitative research by generating findings to a large sample, or by identifying groupes that warrant in-depth, qualitative study.**

- **qualitative research can help to interpret relationships between variables discovered in quantitative research.**

When qualitative and quantitative survey approaches are most appropriate.

When qualitative research is most appropriate	When survey approach is most appropriate

When the subject matter is unfamiliar	when the subject matter is clearly defined and familiar
for exploratory research, when relevant concepts and variables are unknown or their definition are unclear	when measurement problems are minor or have been resolved
For explanatory depth; when you want to relate particular aspects of behaviour to wider context.	When there is no need to relate findings to the broader social or cultural setting, or this setting is already sufficiently understood.

when there is no need to relate findings to the broader social or cultural setting, or this setting is already sufficiently understood.	when detailed numerical descriptions for a representative sample is required
when facility of approach is needed to allow for discovery of unexpected and in-depth investigation of particular topics	when repeatability of measurement is important
for studying selected issues, cases or events in depth and detail	when generalizability of results and comparisons across population is desired.

Quantitative research approach:

- **is one in which a pre-determined series of questions are asked in the exact same way to every respondent.**
- **it allows statistical inferences from relatively small samples to a large populations;**
- **relationship between variables can be assessed and measured;**
- **surveys are fairly easy to design and quick to implement; and**
- **results from standardize surveys can be compared across time periods.**

8. Define health principle and concept.

9. Discuss culture, custom, value, knowledge, attitude, and their association with health education.

KNOWLEDGE: This is the information stored in memory.

MEMORY: Refers to storing and recalling past experiences and ideas.

AWARENESS: This is the lowest level of cognition and means simply knowing about the existence of something.

ATTITUDE: This is the predisposition to respond in a favourable or unfavourable manner toward a target.

PERCEPTION: This refers to reception and interpretation of sensory input.

PRACTICE: This is an overt behaviour, habits, or customs of a person.

BEHAVIOUR: It is the various voluntary movements/actions undertaken by the body in response to imposed conditions, motives and decisions. Behaviour can also be referred to every activity of the body as an individual. According to the Oxford dictionary, behaviour means "the way in which a thing or person acts, conduct, manners, mode of behaviour; reaction under a set of imposed conditions."

MOTIVATION:

This is the stage of thinking process, which gets sufficient intensity to direct the body to do a particular thing to satisfy the perceived want

DEFENSE MECHANISM:

Mental mechanisms which help an individual to smooth over the frustrations and conflicts are known as defence mechanisms. It helps the individual to divert the energy in such a manner as to relieve the tension and also to make it appear to others that the behaviour is not wrong, it serves the purpose of defence.

CULTURE:

Culture is that whole which includes knowledge, belief, custom, art, morals, law and any other capabilities and habits acquired by man as a member of the society. The term culture embraces a wide range of activates and characteristics of individuals as well as groups with regard to their way of life. The general mode of the life with its customs, beliefs and articles and artefacts used for various purposes by societies are all comprehensively known as culture or cultural characteristics. In other words culture refers to the more or less organised and persistent patterns of habits, customs, attitudes and values which are transmitted from generation to generation. It consists of a shared behaviour which is recognised, approved and cherished by society.

COMMUNITY:

Community is collection or a group of persons in social interaction in a geographical area and sharing a common social and cultural life. Community is characterised by (a) a geographical area; which can be delimited; (b) a population; (c) social and cultural traits and sentiments passed on from generation to generation; (d) economic status; (e) specific functions or occupations or pursuits as a whole for the community or with a variation amongst different sections of the community; (f) a group dependence or belongingness and an interdependent behaviour.

SOCIETY:

Society is something that is closely identified with the community. It arises out of community. While community refers to the structure, location and size of the population, society refers to the human relationship, behavioural patterns, cultural traits, institution, etc., in the community. Society refers to the "totality of social relationships among men. Each aggregate or collection of human beings of both sexes and ages bound together into a self perpetuating group or possessing its own more or less distinctive institutions and culture may be considered a society. Society is any community of individuals joined together by a common bond of nearness and interaction - it is a group of people acting together in general for the achievement of a certain goal or purpose.

. CULTURAL & COMMUNITY DETERMINANTS OF HEALTH BEHAVIOUR

The **Cultural norms** are generally derived from the previous generation from the way in which things were done for the good and convenience of the society. A **social norm** is a type of social behaviour that is valued by the society as appropriate and benefiting. A departure from these accepted and valued types of behaviour is socially condemned.

Every individual places or gives a relative worth to everything around. This worth or preference or judgement or weight age is known as **value.** It is a cognition, a motor, and above of all a deeply appropriate disposition. Value has a strong influence on all actions and behaviour of every man. Value helps individuals and groups to make choices or alternatives for action. Value guides human behaviour. The education in the community will have to take into account the religious or cultural values with regard to what is being taught according to their own values.

Beliefs are defined as a continuing permanent perception about anything the individual world. Belief is a social product of individual perception as well as group experience. Beliefs like values have an influence on behaviour and attitudes. There are many traditional beliefs on causation, cure and prevention of diseases since the ancient times, which continue to be perpetuated generation through generations.

Habits & addictions can be contracted in a community, and these in turn influence behaviours of the addicted people as well as other members in the community.

Custom represents the group behaviour. Custom is a pattern of action shared by some or all members of the society. It is the totality of the behaviour pattern carried by traditions. *Habit* is a *personality trait* whereas the *custom* is *a group trait*. Customs will mostly be based on beliefs, attitudes, and values and also past experience.

Environmental Health

1. **Write the effect of rapid population growth in development, environment, (describe the relation between population growth and environmental condition).**

The link b/n population and env't on the one hand and population and economy on the other hand have been one of the most critically debated issues in among accadamitians,GO and NGOs.

The env't is linked with the survival of the society and thus inevitably with development

Ther is no dout that pop growth,size,structure spatial distribution are significant factores affecting the env't.In turn env't also affect fertility,mortality and morbidity.Thus one can surely tell that there exist a two way r/p b/n demographic factors and the env't.

The impact of high pop growth or high pop density causes catastrophic env'tal degradation and resource consumption

- unsafe and inadequate water supply
- increased human waste
- decreased quality of food safety and hygiene
- disrupted residential environment
- increased solid waste
- ambient air pollution & water pollution
- causes occupational and community health hazard

and these env'tal changes have effect in social organization and the change in social organization has consequence on development

There are essentially three arguments regarding the r/p b/n population growth and economic development:

1. Anti-Growth: Continued population growth will wipe out economic gain and lead to economic and development collapse
2. Pro-growth: Population growth stimulates development rather than slowing it down and that more people will bring more productivity and greater power
3. Neutral: Population growth has noting to do with economic development at all, but that hander development caused by the in justice of the world system.

However it is generally agreed that up to a certain limit population growth is conducive for the full utilization of natural resources, but if it is too large it can cease to have an optimum r/p with natural resource and become an obstacle for development.

2. DISCUS GLOBAL ENVIRONMENTAL PROBLEMS

3. Types of latrine and its drawback.

- Deep Shallow pit (trench) (cat methods)
- Traditional pit latrine
- VIP latrines
- Pour-flush latrine
- Cesspools,
- Aqua privy
- Bucket latrine
- Bore hole latrine
- Compost latrine

These all are non water carriage

4. **Discus Sanitation in Ethiopia**_

- The Five Year Health Sector Development Plan (HSDP, MOH):

Population	Sanitation coverage, 1998	Planned coverage, 2000
Rural	1%	16%
Urban	60%	75%
Both	8%	24%

5. Discus Impact of the low latrine coverage:-

- Continued organic pollution of the environment,
- Destructing human comfort,
- Faeco-oral transmission is sustained.

6. Urban latrine access situation: (1994 Census, CSA)

Facility type	% of housing units
Flush private	**3.45**

Flush shared	
Pit private	**2.04**
Pit shared	**24.20**
No latrine	**26.85**
NA	**42.33**
	1.13

NB: 9.72% of all urban latrines are flush; 90.28% pit latrines.

7. What is the impact of population growth on environmental development, use two countries and discuss.
8. What is commonest latrine used in Ethiopia? How many percentages? Discuss its drawbacks

9.How did environmental health problems linked with the mortality of infants, children, and adults?

Health Management

1. If you are working as health manager

a. What problems did you face?

b. How did you manage it?

2. Define

a. What is community diagnosis?

e. What clinical diagnosis and relating it with community Dx?

3. What is the contribution of traditional medical belief system to health care?

4. What is the difference between health professions management and health care workers management?

5. What was the potential primary health coverage in 1997, 1998, 1999 in Ethiopia?
2002/03 = 61%

6. How the above coverage change, if private health care institutions were included?

7. What are the calculations made in questions 5 and 6 above?

8. Discuses organization, organization structure and organizational chart.

9. What is authority, types, Delegation and Leadership?

10. Discuss human resource management.

11.What Ethiopian policy looks like?

- Democratization and decentralization of the health care delivery.
- Development of the preventive, promotive & curative components of the health care.
- Assurance of accessibility of health care for all segments of the population.
- Promoting the participation of the private sector & NGOs in health care delivery system.

11. MDG Major focuses

Focus on poverty related diseases: HIV/AIDS, Malaria, TB, Child Survival & programmes aimed at the reduction of maternal mortality. Land Area: 1.1million Sq.km Total Population: 70.0 Million. 85% of the population lives in rural areas. Primary education enrollment ratio: 59% Male= 67% Female = 50% (Gross).

12. Discus HIS

HIS is a set of components & procedures organized with the objective of generating information for the health care management decisions at all levels of the health system.

Purpose.

- HIS
  - to monitor the health status and health services of a nation
  - to improve public health care leadership & management decisions at all levels

Management Information system (MIS) including HMIS is defined as:

- ***A system designed to produce information to be presented to the management to assist in decision-making and to enable it to ascertain the progress made by the organization in the achievement of its major objectives (WHO 1971)***
- ***MIS focuses on routine activities & provides operational information***
- **Concentrates on the "in-house activities".**

13. List types of managers for the three levels by choosing one organization as exmple

1. First-line mangers:

Supervisors, School directors, Coaches, Technical supervisor

2. *Middle level manager*

Department heads, Heads of services

3. Top managers:

Executive officer, president vice president

14. What are the priorities of the Ethiopian policies?

Section 2- Epidemiology

1. Differences and similarities of prevalence, incidence and attack rate and and also define and give one example.

AR = New cases among the population during the specified period

Population at risk at the beginning of the period

An attack rate is a variant of an incidence rate, applied to a narrowly define

Population observed for a limited time, such as during an epidemic. It is

Usually expressed as a percent.

Common Measures of Disease Frequency

The frequency of health related events are measured by risk, prevalence and

Incidence rate.

Risk (cumulative incidence):

? Likelihood that an individual will contract a disease.

? The proportion of unaffected individuals who, on average, will

Contract the disease of interest over a specified period of time.

RISK= New cases occurring during a given time period

Population at risk during the same period

Prevalence: The amount of disease that is present already in a population.

Indicates the number of existing cases in a population.

Prevalence: All new and pre-existing cases during a given time period

Population during the same time period

Incidence: Measures the rapidity with which newly diagnosed patients

Develop over time. Most common way of measuring and comparing the frequency of disease in populations. The period of time for the rate must be specified.

Incidence = Number of new cases during observation period

Rate Person-time observed

2. Measure of associations, properties, and uses

3. Calculation of specific attack rate

4. What is sensitivity and specificity in a valid data?

Accuracy = Validity + Precision

Is the extent to which data collected actually reflect the truth.

Validity

The concepts of sensitivity (ability to detect true positive) and specificity (ability to detect true negatives) can be used to characterize the validity of a measure ("measurement validity"). Study results are also described as "valid" when there is no systematic misrepresentation of effect or "bias" ("validity in the estimation of effect"). Validity is often described as internal or external. Concerns the validity of inferences that do not internal validity

Proceed beyond the target population for the study. Internal validity is threatened when the investigator does not have sufficient data to control or rule out competing explanations for the results. On the other hand, concerns generalize ability, External validity, or inferences to populations beyond the study's restricted interest. External validity is threatened, for example, when the investigator attempts to apply the findings of the study to a population which is not comparable to the population in which

the research was completed. Internal validity should be the primary objective in study design, however, since efforts to

ANALYTICAL

Observational studies

Information is obtained by observation of events. No intervention is Done, no deliberate interference with natural course of disease. Cohort and case-control are in this category.

I Cohort

Subjects are selected by exposure, or determinants of interest, and Followed to see if they develop the disease or outcome of interest.
E.g. Take Awrajas with trained manager and untrained managers and follow them to see which group will do better to increase Coverage.
Follow 100 children who received BCG vaccination and another 100 who didn't get BCG vaccination and see how many of them get tuberculosis.

II. Case Control

Subjects are selected with respect to presence or absence of disease, or outcome of interest, and then inquiries are made about past exposure to the factor(s) of interest.
E.g. Take people with and without TB, ask them if they ever had BCG vaccination.
Take Awrajas with high and low EPI rates, ask them if their Awraja health managers were trained.

DESCRIPTIVES

Dealing with population

Correlation or ecological

Dealing with individuals

Case report or series

Cross sectional survey

Summary of Measures of Association

Attributable risk (AR) or Risk difference (RD)

to (or attributable to) the exposure. Quantify the excess risk in the exposed that

can be attributable to the exposure by removing the risk of disease that could

have occurred anyway due to other causes.

AR = Risk in exposed - Risk in non-exposed

: estimates the magnitude of the association between exposure

Relative risk (RR)

and disease and indicates the likelihood of developing the disease in the exposed

Group relative to those who are not exposed.

RR = Risk in exposed

Risk in unexposed

is a simple ratio, not a proportion. Indicates odds of exposure

Odds of exposure

Relative to the disease status.

Odds of exposure in diseased = a/c or a:c

Odds of exposure in not-diseased = b/d or b:d

: is a simple ratio, not a proportion. Indicates odds of diseased

Odds of disease

Relative to the exposure status.

Odds of disease in exposed = a/b or a:b

Odds of disease in unexposed = c/d or c:d

: is the chance of being exposed (or diseased) as opposed to not

Odds Ratio (OR)

being exposed (or diseased). It is possible to calculate either exposure or disease

odds ratio, which are exactly the same. The epidemiological thinking behind odds

ratio is that if a disease is casually associated with an exposure, then the odds of

exposure in the diseased group will be higher than the corresponding odds in the

non-diseased group. It is also called cross product ratio.

Exposure OR = a/c b/d = a/c x d/b = ad/cb

Results are

Disease OR = a/b c/d = a/b x d/c = ad/bc

the same among exposed: estimate the proportion of Attributable Risk Percent (AR%)disease among the exposed that is attributable to the exposure, or the proportion of the disease that could be prevented by eliminating the exposure.

AR% = Risk in the exposed - Risk in unexposed

Risk in exposed

$= \frac{RR - 1}{RR} * 100$ or $\frac{OR-1}{OR} \times 100$

is the risk in total population minus risk in Population Attributable Risk (PAR)the non-exposed. Estimate the excess rate of disease in the total study population that is attributable to the exposure.
PAR = Risk in population - Risk in unexposed

Estimate the proportion of disease

Population Attributable Risk Percent (PAR%)
in the study population that is attributable to the exposure and thus could be
eliminated if the exposure were eliminated.

PAR% = Risk in population – Risk in un exposed X 100
Risk in population

Possible Outcomes in studying the relationship between disease and exposure

1. No association between exposure and disease

Attributable risk = 0
Relative risk/odds ratio = 1

2. Positive association between the exposure and the disease (i.e., more
exposure, more disease)

Attributable risk > 0
Relative risk/odds ratio > 1

3. Negative association between the exposure and the disease (i.e., more
exposure, less disease)

Attributable risk < 0 (negative)
Relative risk/odds ratio < 1 (a fraction)
* Association is dependent on your definition of exposure.
Example: Exposure is the sex of the Community Health Agent (CHA)
CHA Female Male
AR >0 <0
RR/OR >1 <1
===> The above summary indicates that there is a positive association with
female CHA and negative association with female CHA.
Interpretation of Measures of Association
Rate Ratio: measures the strength of association between an exposure and disease and provide information that can
be used to judge whether a valid observed association is
likely to be causal.
Attributable Risk: measures the public health impact of an exposure, Assuming that the association is one of cause and effect.
Section 7-Reproductive Health
1. Define RH (Reproductive Health), Reproductive right, Reproductive Health care and Sexual health
Health: is a state of complete physical mental and social well being and not merely the absence of disease or infirmity, in all matters related to the reproductive system and its functions and processes.

Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to

reproduce and the freedom to decide if, when and how often to do so. Implicit in this last condition are the right of men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods of their choice for regulation of fertility which are not against the law, and the right of access to appropriate health care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having healthy infant. In line with the above definition of reproductive health, reproductive health care is defined as the constellation of methods, techniques and services that contribute to reproductive health and wellbeing by preventing and solving reproductive health problems.

Sexual Health: is the enhancement of life and personal relations, and not merely counselling and care related to reproduction and STDs.

Reproductive rights embrace certain human rights recognized in national and international legal and human rights documents:

- The rights of couples and individuals to decide freely and responsibly the number and spacing of their children, and to have the information and the means to do so;
- The right to attain the highest standard of sexual and reproductive health; the right to make decisions free of discrimination, coercion or violence.

Example of The RH Rights: ***Right to life,*** Right ***to Liberty & Security***, ***Right to be Free from all forms of discrimination***, ***Right to Privacy of Service***, ***Right to Information and Education*** ***Right to be Free from Torture and Ill Treatment***

Components of Reproductive Health Care

The Components of reproductive health care include the following:

- quality family planning counselling, information, education,

communication and services;

- prenatal, safe delivery and post natal care, including breast feeding;
- prevention and treatment of infertility;
- prevention and management of complications of unsafe abortion;
- safe abortion services, where not against the law;
- treatment of reproductive tract infections, sexually transmitted diseases and other conditions of the reproductive system;
- information and counselling on human sexuality, responsible parenthood and sexual and reproductive health;
- active discouragement of harmful practices, such as female genital mutilation;
- Referral for additional services related to family planning, pregnancy, delivery and abortion complications, infertility, reproductive tract infections, sexually transmitted diseases and HIV/AIDS, and cancers of the reproductive system, including breast cancer. Wherever possible, reproductive health and family planning programs should include facilities for the diagnosis and treatment of STDs, recognizing that they often increase the risk of HIV transmission.

QUALITY OF CARE IN REPRODUCTIVE HEALTH

Quality of care refers to the overall effectiveness and appropriateness of health care. Quality of care is about providing services that clients want and need. It is also about allowing staff to work more effectively.

Elements of Quality Health Care:

- Promotion and protection of health
- Accessibility and availability of services

- Acceptability of services
- Technical competence
- Availability of essential supplies and equipment
- Quality of client provider interaction
- Adequate and relevant information and counseling for clients
- Involvement of clients for decision making
- Comprehensiveness of care and linkages to other reproductive services
- Continuity of care and follow up

Quality of Reproductive Health care means:

- Care should be personalized
- Clients should be treated with dignity
- Privacy should be maintained
- Clients should not have to wait a long time before being served
- Health workers should inform about the available services
- Facilities where services are provided should be clean and client flow should be well organized
- Routine services should be available at least during normal working hours, and labor and delivery services, and services for complications of Reproductive Health, which require emergency care, should be available on a 24 hour a day basis.
- An adequate flow of the essential supplies and equipment should be maintained

IEC IN REPROUCTIVE HEALTH

Information, education and communication are processes and activities that are basic to any program of social changes. The specific

kind of change they are expected to accomplish is the creation of awareness and understanding as well as the transition to new practices. Behind such changes in behavior must lay substantial changes in attitudes, beliefs and social norms. Information includes the generation and dissemination of facts, issues and new ideas used to create awareness among communities, families, individuals, policy makers, service providers of important developments.

Education facilitates learning to enable audiences to make rational and informed decisions and to influence their behavior over the long term. Communication is aimed at fostering interest, creating demand and otherwise supporting reproductive health program activities. It is a planned process for motivating people to adopt new attitudes or behavior or to utilize existing services. It is based on peoples concerns, perceived needs, believes and current practices.

Characteristics of Effective IEC Messages

An effective IEC message is one that addresses issues or problems that are relevant to the specific audience and is designed to bring about changes in knowledge, attitude, behavior and practice. An effective message is one that is

- derived from an issue
- specific
- meaningful to the audience
- adapted to the medium or channel through which it is to be conveyed

- Measurable for its effectiveness and impact in bringing about a change in KAPB.

Some of the major ones which may greatly contribute to mortality and morbidity are:

Unregulated fertility ("The four Toos" – Too many children, too early, too late, too closely spaced)

2. Describe four important points for eradication of polio.

3. List components of MCH

4. Which of the following indicators shows the greatest disparities among population group?

a. Maternal mortality ratio

b. Child mortality ratio

c. Neonatal mortality ratio

D.Infant mortality ratio

e. Adolescent mortality ratio

5. Which of the following is not used for the emergence contraception?

a. Combined oral contraceptive b.Contraceptive implants

c.Progestin only pills

d. IUCD e. None of the above

5. Which of the following is a killed vaccine? a. OPV b. BCG c. Pertusis d. Measles e. None of the above.

6. The constellation of methods, techniques services that contribute to reproductive health and well-being is a. Reproductive Health b.Reprodutive Rights c.Reprodutive Health Care d. enabling factors for reproductive health. E.Maternal and Child Health

7. Which of the following is not a characteristic of Gender

a. Difference interact with other inequalities such as race, age, and social class and ethnicity

b. Is ability to give birth and breast feed children.

c. Embedded in a society's social, cultural, economics, and political systems.

d. Learned and change over time.

e. Function at household, community, and national levels.

Gender describes the socially constructed roles, activities, and responsibilities assigned to women and men in a given culture, location, or time. It differs from sex which describes biological and genetic differences between men and women. Gender is learned and changes over time. Gender functions at the household, community, and national levels and thus is embedded in a society's social, cultural, economic, and political systems. These systems are based within a given legal framework which includes not only laws and regulations but the institutions which enforce or fail to enforce them, Gender involves issues related to how women and men perceive themselves, think, and behave. Gender differences interact with other inequalities such as race, age, social class, and ethnicity. Understanding gender systems benefits from examining the relationships between men and women as well as their respective roles

IMPORTANT INDICATORS IN MCH/RH

FERTILITY The actual production of live offspring. Stillbirths, foetal deaths and abortions are not included in the measurement of fertility in population.

FECUNDITY: The ability to produce live offspring. Fecundity difficult to measure since it refers to the theoretical ability of a woman to conceive and to carry a foetus to term.

GRAVIDITY: The number of pregnancies (Completed or incomplete) experienced by a woman.

PARITY: The number of full term children previously borne by a woman, excluding miscarriages or abortions in early pregnancy, but including stillbirths.

GESTATIONAL AGE: Strictly speaking, the gestational age of the foetus is the elapsed time since conception. However, as the moment when conception occurred is rarely known precisely, the duration of gestation is measured from the first day of the last menstrual period.

Preterm: < 37 completed weeks; < 259 days

Term: 37 - < 42 completed weeks: 259 - 293 days

Post term: ≥ 42 weeks; ≥ 294 days

PUERPERIUM: The period from delivery of the placenta until involution of the uterus is complete - approximately 6 to 8 weeks.

PERINATAL: The period from the end of the 28 week of pregnancy to the end of the 7 day of life of the newborn.

NEONATAL: That period corresponding to the first 28 days of life.

INFANT: While in the lay literature this definition varies, in epidemiology, it refers to the "child" less one year of age.

CHILD: The operational definition of child varies. In epidemiology it usually refers to a one to four year old (i.e. 365 days to 4 years and 364 days).

UNDER FIVE: A “child" less than 5 years old.

2. MORTALITY RATES AND RATIOS

The following are indicators that are often used in MCH discussions and students should be conversant with their use and relevance to MCH. Such indicators, if reliable, and if available in a timely fashion, are invaluable in planning and programming of MCH services. The various rates will give an idea of what is happening in the community or the country in question. For example, the main factors responsible for the deaths of infants are usually different than those responsible

for children one to four years of age. The rates will therefore provide information on the importance of these factors in the community.

INFANT MORTALITY RATE: Number of infants ($\leq$ 1 year) who died during a year divided by the number of live births during the year: expressed in terms of 1000 live births.

$$\text{IMR} = \frac{\text{\# infant deaths}}{1000 \text{ live births}}$$

The IMR can be taken as indicator of economic conditions and the state of nutrition, education, sanitation and medical care. The IMR in combination with the economic indicator GNP (or GDP) per capita is often used to judge social equity in a country.

NEONATAL MORTALITY RATE: Number newborns, up to age 28 days, who died during one year, per 1000 live births in the same year.

$$\frac{\text{\# Deaths} < 28 \text{ days}}{1000 \text{ live births}}$$

POST NEONATAL MORTALITY RATE: Number of children dying in the post neonatal period (29 days to one year of age) during one year per 1000 live births.

$$\frac{\text{\# Deaths 29 - 365 days}}{1000 \text{ live births}}$$

The post neonatal mortality rate is generally taken as an indicator of the status of nutrition and infectious diseases in a country. The dramatic reduction in IMR in the industrialized countries of North America and Western Europe has been as a result of a decrease in post neonatal mortality following improvements in nutrition and prevention and control of infectious diseases. The neonatal morality rate remains relatively constant and currently constitutes the bulk of IMR in industrialized countries, while the post neonatal mortality rate

is a far more important component of the IMR in developing countries than is neonatal mortality.

STILL BIRTH RATE: Number of deaths after the 28 weeks of pregnancy occurring during one year per 1000 total births (still births and live births)

$$\frac{\text{\# Deaths 29 > 28 weeks gestation}}{\text{1000 total births}}$$

PERINATAL MORTALITY RATE: Number of still births and deaths in the first 7 days of life in one year per 1000 total births.

$$\frac{\text{\# Stillbirths + deaths < 7 days}}{\text{1000 total births}}$$

The perinatal mortality rate can be taken as indicator of the quality of obstetric and neonatal care.

The stillbirth rate and the perinatal death rate require knowledge of the number of total deaths which is less likely to be available than live births. They are therefore less frequently used.

CHILD MORTALITY RATE: Number of deaths of children 1 - 4 years of age in a given year, per 1000 children in the same age group at the mid point of the year.

$$\frac{\text{\# Deaths 1 - 4 years}}{\text{1000 children 1 - 4 years at mid year}}$$

The CMR is an indicator of socio economic development and mainly reflects environmental factors: nutrition, sanitation, injuries, and infectious diseases.

UNDER 5 MORTALITY RATE (U5MR): Number of deaths of children under 5 years of age, in a given year, per 1000 children in this age group at the mid point of the year.

$$\text{\# Deaths < 5 years}$$

1000 children < 5 years at mid year or some authors prefer 1000 live births

Like the CMR, the U5MR is an indicator of economic conditions. It combines infant and child mortality (i.e. it indicates a cumulative probability of a child to reach age 5) and reflects the same factors. These two indicators are more difficult to obtain in developing countries than those based on live births, since accurate population figures are seldom available. The number of live births in a given area is more likely to be known.

MATERNAL MORTALITY RATE: Number of deaths of women from puerperal causes in one year per standard number of total (live) births. The usual number is 100000 so that the maternal mortality rate is

$$\frac{\text{\# Pregnancy related maternal deaths}}{100000 \text{ (live) births}}$$

The denominator in fact includes only live births since it is more readily available than total births. In reality MMR is a ratio or index rather than a rate, since the numerator should include all deaths related to pregnancy and the denominator should include all pregnancies, which is impossible to count.

Though not a rate the MMR gives a useful indicator of risk associated with pregnancy.

Lifetime probability of maternal survival = 1 - P maternal survival

Where P maternal survival = $(1 - (\text{MMR X } .001)^{\text{TFR}}$

The MMR is a reliable indicator of the quality of obstetric care, as well of economic conditions in general.

Family planning means having the number of children you want when you want them.

Family planning methods

I. Traditional Family Planning Methods

1. Lactational amenorrhoea (LAM)

LAM is very effective (1 - 2 pregnancies per 100 women during first 6 months) .

2. Abstinence

Its major limitation is that many people (couples) may not find it acceptable to go without sex.

3. Coitus Interrupts

It is not a reliable method because there is often pre - ejaculation of sperm which can lead to pregnancy. Hence, this is not a method to be recommended.

II. Natural Family Planning Methods

There are four main types

1. The rhythm or calendar method
2. The basal body temperature method (BBT)
3. The cervical mucus method (Billing’s method)
4. The sympatothermal method (Combination of BBT and Billing

2. Measles and BCG vaccines are very sensitive to light at all times.

3. Freezing damages DPT and TT as well as inactivated polio vaccine and Hepatitis B vaccine.

Therefore, the safest policy is to keep all vaccines at the correct COLD temperature (0 - 8 degrees - but not freezing), and in a dark place.

4. Chemicals, antiseptics, detergents, soap etc can inactivate vaccines, and therefore should not be used to sterilize.

Most sensitive OPV

! Measles

! Yellow fever

! Hepatitis B

! Inactivated polio vaccine

! DPT

Least sensitive TT BCG

Sensitivity of vaccine to heat

1. LACK OF INFORMATION

1. Unaware of need for immunization

2. Unaware of need for return for second or third dose

3. Place and/or time of immunization unknown

4. Fear of side effects

5. Wrong ideas about contraindications

2. LACK OF MOTIVATION

7. Postponed until another time

8. No faith in immunization

9. Rumours

3. OBSTACLES TO IMMUNIZATION

10. Place for immunization too far

11. Time of immunization inconvenient

12. Vaccinator absent

13. Vaccine not available

14. Mother too busy

15. Family problem, including illness of mother
16. Child ill - not brought
17. Long waiting time

Four of the commonest are:

Dropouts

Missed opportunities

Never reached despite having access

Lack of geographic access

1. Drop outs

A dropout is defined as a woman or a child who failed to return for subsequent doses for which she or he is eligible. Dropout rates are among the most important problems countries are facing throughout the world in increasing coverage rates. People start immunization and fail to complete it for different reason

Drop out rates are calculated as follows:

Over all drop out rate: $\frac{\text{Coverage with BCG - Coverage with measles}}{\text{Coverage with BCG}}$

Drop out rate for a single antigen (OPV)

$$\frac{\text{Coverage with OPV1 - Coverage with OPV3}}{\text{Coverage with OPV1}} \times 100$$

There is a problem whenever the drop out rate is greater than 10%. It is essential to determine why the failure occurred. This determination can be made through qualitative research (focus group discussions with community leaders, care takers and health workers).

Frequent responses to questions concerning the reasons for drop out are:

1. Health workers do not explain the need.
2. Unsure of dates to return
3. Long wait at the centre

4. Centre opens at inconvenient hours
5. Health workers nasty
6. Mother usually busy on other engagement
7. Family left the place for a while
8. Child developed side effects or was sick on the appointed date

2. Missed Opportunities

Missed opportunities occur when women or children who need immunizations are not immunized even if they are at the health facility (for example if they are there to obtain curative services). Current policy is that all people at a health facility for any reason should be screened for immunization status and vaccinated if eligible. The frequent occurrence of missed opportunity for immunization is regarded as one of the major problems of in the delivery of immunization services. Several clinic based studies have shown that missed opportunities occur in high percentages of consultations. Missed opportunities occur in two settings: 1. during visits for immunization and other preventive services and. 2. During visits for curative services. In both cases, eliminating missed opportunity has the potential to raise overall immunization coverage in a population.

It was found in Mozambique and Guinea Conakry that missed opportunities and inappropriately timed immunizations subsequently reduced immunization coverage achieved in these countries.

.

Common causes for missed opportunities include:

1. Workers do not know the policy
2. Workers screen but tell patients/people to return later
3. Workers only vaccinate women with TT if they are pregnant
4. Workers will only open a vial if there are enough clients who need it.
5. False contraindications

6. Vaccine not available
7. Only one vaccine is given when more than one is indicated
8. Mothers are not immunized when their children are

3. People never reached

These are people who never use the services provided for reasons other than lack of geographic access. As mentioned above informal interviews and the 75 household survey may be used to determine the reasons. Possible explanations include:

1. Cost (including fees and transport)
2. People unaware of the services
3. People unaware of the importance of the services
4. Time constraints (women headed households)
5. Cultural or ethnic barriers (beliefs, rumours)
4. Geographic barriers

WHAT IS COMPONET OF MCH ?

1. ANC Service
2. Safe Delivery
3. PNC Service
4. EPI Service
5. Family Planning
6. Health Education
7. Growth Monitoring
8.

Rationale for GM

Growth charts can be seen as useful for three purposes:

1. Screening: to assist health workers to diagnose children who are suffering from or in danger of suffering

from malnutrition and to select those children who are seriously malnourished and may need treatment and/or referral.

2. Education: to assist health workers to educate mothers about child growth and nutrition.

3. Evaluation: of nutrition programs.

The Triple A process is the basis for the use of GM. But what happens in reality? The process has many steps. The theoretical pattern is as follows:

Assessment: The caregivers and children arrive, are registered, the child is weighed by one worker and the weight is recorded usually by another.

Analysis: One of the workers, usually the most senior is supposed to look at the chart, determine whether there is a problem, examine the child if indicated, and provide an intervention if required.

Actions: If it is determined that an intervention is indicated, one of the following applies: treatment, counselling, referral or some combination of the above.

Experience of GM was published. Since then a number of other critical appraisals of GM programs have appeared in the literature. The concerns in terms of the above stated three purposes for GM are as follows:

Growth promotion and Development

1. Breastfeed infants exclusively for at least 4 -6 months and continue for 2 years or longer.
2. Starting at six months of age, feed children with complementary foods, while continuing to breastfeed up to two years or longer.
3. Ensure that children receive adequate amounts of micro nutrient (vitamin A, iodine and iron in particular) either in diet or through supplementation.
4. Promote the child's mental and social development by responding to a child's needs for care, by providing a stimulating environment.

What are Components of PHC?

1. Calendar Method

The client is advised to monitor the length of at least 6 menstrual cycles while abstaining or using another contraceptive method and identify the longest and the shortest cycle. The fertile days are identified as follows: Longest cycle minus 11 days = last fertile day. Shortest cycle minus 18 days = first fertile day. The woman is then advised to avoid sexual intercourse during the fertile days.

III. Barrier Methods

1. Condom
2. Diaphragm
3. Spermicidal

Emergency Contraception

Emergency contraception is used after unprotected sexual intercourse, if pregnancy is not planned or desired. The emergency contraceptives that are commonly used are COCs, POPs, Antiprogestins (Mifepristone) and IUCDs (copper releasing). All are very effective (less than 3% of women become pregnant during that cycle). IUCDs also provide long term protection.
Generally there are two types of IUCDs; Copper releasing and progestin releasing. The IUCD that is currently distributed in Ethiopia is Copper T 380A.

Voluntary Surgical Contraception (VSC)

VSC for women - Tubal occlusion

VSC for men - Vasectomy

Causes of Maternal Death

It is customary to classify causes of maternal deaths under three headings: direct, indirect and coincidental.

Direct causes refer to diseases or complications that occur only during pregnancy, including antepartum and postpartum/postpartum haemorrhage (25%), puerperal sepsis (15%), unsafe abortion (13%), hypertensive diseases of pregnancy (12%), obstructed labour (8%) and ectopic pregnancy (10%). The direct causes of maternal mortality (together with anaemia) are responsible for more than 80% of the deaths.

Indirect causes (20%) are diseases that may be present before pregnancy but are aggravated by pregnancy; examples include heart diseases, anaemia, essential hypertension, diabetes mellitus, malaria, and haemoglobinopathies.

Coincidental causes are fortuitous in nature; deaths from traffic accidents are a typical example. They may be excluded from the calculation of maternal mortality rates. In fact, the reasons women die in pregnancy and childbirth are many layered. Behind the medical causes there are logistic causes, behind this are social, political, and cultural factors which together determine the status of women, their health, fertility and health seeking behaviour etc.

What is safe motherhood?

Safe motherhood means ensuring that all women receive the care they need to be safe and healthy through pregnancy and child birth

The medium risk group

- Primigravidae
- Grand multiparae with normal pregnancy
- Patients with severe asthma, breathlessness or dyspnoea
- Patients with proteinuria plus one (+)
- Previous caesarean section cases
- Patients with breech and other mal presentation

The high risk group

- Previous intrauterine foetal death
- Previous neonatal death, intrauterine foetal growth retardation
- Polyhdramnios
- Unsatisfactory maternal weight gain or low grade hypertension
- Sustained proteinuria (++ or more)
- Antepartum haemorrhage
- Multiple pregnancy
- Recurrent premature labour
- Medical conditions (cardiac diseases, diabetes mellitus)
- RH isoimmunization
- Post maturity

The following table lists complications which are serious in them selves and are also predictive of serious complications. Thus, treatment is also secondary prevention.

- Anemia
- Hypertensive disorders, including pre-eclampsia and eclampsia
- Active or recurrent urinary tract infection (UTI)
- Vaginal bleeding
- Syphilis
- Preterm labour (previous or present pregnancy)
- Gonorrhoea and chlamydia infections
- HIV/AIDS
- Malaria
- Intestinal parasites

Clean environment, clean hands, clean delivery surface, clean perineum, and clean cord cutting instruments

The social and economic disadvantages that women face make them vulnerable to STDs, including HIV/AIDS as illustrated, for example, by their exposure to the high risk sexual behaviour of their partners. The risk of transmission from infected men to women is greater than form infected women to men, and many women are powerless to take steps to protect themselves.

More than 20 diseases including HIV are spread by sexual contact. Every day more than million people are infected with a curable STD – an estimated 333 million cases worldwide each year. The four most common STDs (excluding AIDS) are gonorrhoea, syphilis, chancroid (rare in developed countries), chlamydia and trichomoniasis – are relatively easy to cure using antibiotics. However, many people especially women who have STDs, may not have any symptoms and so

do not know that they need treatment. Every year over 200 million cases of gonorrhoea and over 50 million cases of syphilis are known to occur globally. STDs

The five main killer diseases of children ARI, diarrhea, measles, malaria and malnutrition contribute more than 70% of the deaths in children

Three types of diarrhoea:

1. AWD representing 80% of cases and 50% of deaths
2. Acute diarrhoea due to dysentery causes 10% of diarrhoeal cases and 15% of deaths and
3. Persistent diarrhoea causes 10% of cases and 35% of deaths.

Proposed options for management of the sick child.

2. Severe Dehydration: A child who has two of the following signs
    - Lethargic or unconsciousness
    - Sunken eyes
    - Not able to drink or drinking poorly
    - Skin pinch goes back very slowly (more 2 seconds)
3. Some Dehydration: Two of the following signs
    - Restless, irritable
    - Sunken eyes
    - Drinks eagerly, thirsty
    - Skin pinch goes back slowly
4. No dehydration
    - Not enough signs to classify as some or severe dehydration

The strategies adopted for the eradication of Polio

1. Routine immunization
2. National immunization days
3. Outbreak response immunization:
4. Mopping up immunization: This involves house to house immunization in high risk areas:

Tetanus Toxoid Immunization for Women

Dose	Schedule	Protection (Percent)	Duration
TT1	first contact	Nil	None
TT2	> 4 weeks after TT1	80	3 years
TT3	> 6 months after TT2	95	5 years
TT4	> 1 year after TT3	99	10 years
TT5	> 1 year after TT4	99	30 years

Vaccines deteriorate with time and this deterioration is accelerated by heat and sunlight which damage all vaccines - especially polio and measles. All vaccines lose potency when exposed to heat, but some are more sensitive than others (see table)

2. **Measles** and **BCG** vaccines are very **sensitive to light** at all times.

3. Freezing damages DPT and TT as well as inactivated polio vaccine and Hepatitis B vaccine.

Therefore, the safest policy is to keep all vaccines at the correct COLD temperature (2- 8 degrees - but not freezing), and in a dark place.

5. Chemicals, antiseptics, detergents, soap etc can inactivate vaccines, and therefore should not be used to sterilize.

Sensitivity of vaccine to heat

Most sensitive OPV
! Measles
! Yellow fever
!Heat Hepatitis B
! Inactivated polio vaccine
! DPT
Least sensitive TT BCG

3. OBSTACLES TO IMMUNIZATION

1. LACK OF INFORMATION

1. Unaware of need for immunization
2. Unaware of need for return for second or third dose
3. Place and/or time of immunization unknown
4. Fear of side effects
5. Wrong ideas about contraindications

2. LACK OF MOTIVATION

7. Postponed until another time
8. No faith in immunization
9. Rumours
10. Place for immunization too far
11. Time of immunization inconvenient
12. Vaccinator absent
13. Vaccine not available
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4. Centre opens at inconvenient hours
5. Health workers nasty
6. Mother usually busy on other engagement
7. Family left

Epidemiology

Epidemiological studies
Case control
Cohort
Cross sectional
Case serious
Case report
Co relational study, Experimental

Biostatistics

Measure of variability and measure of central tendency
Mean
Median
Mode
Variance
Standard deviation
Range
Concept of P value in relation to alpha

Management

Management by objective

Concept of equity
Concept of equality
Type of mangers

Nutrition

Major nutritional problem in Ethiopia
Strategies for food insecurity in Ethiopia
10 steps developed by MOH for food security

Environmental science

Concept of latrine coverage with the current Ethiopian coverage
Concept of validity in relation with the coverage of latrine
Concept of reliability

Reproductive health

Meaning of health quality in relation with reproductive health
The different methods of contraceptive
MGD- Related with reproductive health
Vaccine storage
Common child hood diseases

Health education

Health behaviour models
Communication
Health education and health promotion
Qualitative and quantitative research modules in behavioural science