NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES

COURSE CODE: EHS 417

COURSE TITLE: ENVIRONMENTAL HEALTH PLANNING

COURSE GUIDE

EHS 417: ENVIRONMENTAL HEALTH PLANNING

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INTRODUCTION

EHS 417 Environmental Health Planning is a two (2) unit course with three (3) modules and nine (9) units. Environmental Health Planning is process of defining community health problems, identifying unmet needs, surveying the resources to meet them, establishing feasible goals/objectives and projecting administrative action to accomplish the purpose of the proposed program. It encompasses all strategic and logistic activities aimed at solving community health problems. It involves development of a **plan of action** with a **clear set of objectives, targets and indicators, interventions** and **activities**. Health planning is used to tackle health issues; for villages, Local Governments, States, countries or worldwide after health needs assessments has been concluded.

WHAT YOU WILL LEARN IN THIS COURSE

In this course, you have the course units and a course guide. The course guide will give you an idea of what the course is all about. It is general overview of the course materials you will be using and how to use those materials. It also helps you to allocate the appropriate time to each unit so that you can successfully complete the course within the stipulated time limit.

The course guide also helps you to know how to go about your Tutor-Marked Assignments which will form part of your overall assessment at the end of the course. Also, there will be regular tutorial classes that are related to this course, where you can interact with your facilitator and other students. Please, I encourage you to attend these tutorial classes.

COURSE AIM

The course aims to give you an understanding of environmental health planning which is an important branch of Public health.

COURSE OBJECTIVES

To achieve the aim set above, there are objectives. Each unit has a set of objectives presented at the beginning of the unit. These objectives will guide you on what to concentrate / focus on while studying the unit. Please read the objective before studying the unit and during your study to check your progress.

The comprehensive objectives of the Course are given below. By the end of the course/after going through this course, you should be able to:

i. Define community environmental health needs assessment (CEHNA)

ii. Discuss the importance of community health needs assessment

iii. Explain the purpose of community health needs assessment

iv. Outline the benefits and challenges in community needs assessment

v. Describe the steps for community needs assessment

vi Define health planning

vii. Learn about strategies in health program planning

viii. Define Monitoring and Evaluation (M&E)

ix. Purpose of M&E

x. Answer some questions related to M&E

xi. Describe the components of M&E

xii. State the importance of M&E

xiii. Learn how to conduct M&E

xiv. Learn about Health Systems

xv. Identify different forms of health systems

xvi. Learn how health systems operates

xvii. Explain what is meant by health information system

xviii. Understand different forms of health information system

xix. Appreciate the role of modern technology in health sciences

xx. Enable you understand what is meant by digital technology

xxi. Develop your own social media account to create awareness on environmental health issue

xxii. Enable you describe how simulations and games are used in public health

WORKING THROUGH THIS COURSE

To successfully complete this course, you are required to read each study unit, read the textbooks materials provided by the National Open University of Nigeria. Reading the referenced materials can also be of great assistance. Each unit has self-assessment exercises which you are advised to do and at certain periods during the course you will be required to submit your assignment for the purpose of assessment. There will be a final examination at the end of the course. The course should take you about 17 weeks to complete. This course guide will provide you with all the components of the course how to go about studying and hour you should allocate your time to each unit so as to finish on time and successfully.

THE COURSE MATERIALS

The main components of the course are:

• The Study Guide

• Study Units

• Reference / Further Reading

• Assignments

• Presentation Schedule

STUDY UNITS

The study units in this course are given below:

MODULE 1 **Principles and Methods of Planning Health Care Services Programs and Facilities**

Unit 1: Community Health Needs Assessment

Unit 2: Strategic Health Planning

Unit 3: Community Participation

Module 2 **Health Planning Outcomes**

Unit 1 Monitoring and Evaluation

Unit 2 Data Used To Monitor and Evaluate Health Programs

Unit 3 Evaluating Complex Programs

MODULE 3 **Health Systems**

Unit 1. Health Systems Theories

Unit 2. Role of Modern Technology in Public Health

Unit 3. Digital Technology, Gaming and Simulations for Public Health

ASSIGNMENT FILE

There are two types of assessments in this course. First are the Tutor-Marked Assessments (TMAs); second is the written examination. In solving the questions in the assignments, you are expected to apply the information, knowledge and experience acquired during the course. The assignments must be submitted to your facilitator for formal assessment in accordance with prescribed deadlines stated in the assignment file.

The work you submit to your facilitator for assessment accounts for 30% of your total course mark. At the end of the course, you will be required to sit for a final examination of 1½ hours duration at your study centre. This final examination will account for 70 % of your total course mark.

PRESENTATION SCHEDULE

There is a time-table prepared for the early and timely completion and submissions of your TMAs as well as attending the tutorial classes. You are required to submit all your assignments by the stipulated time and date. Avoid falling behind the schedule time.

ASSESSMENT

There are three aspects to the assessment of this course.

The first one is the self-assessment exercises. The second is the tutor marked assignments and the third is the written examination or the examination to be taken at the end of the course.

Do the exercises or activities in the unit by applying the information and knowledge you acquired during the course. The tutor-marked assignments must be submitted to your facilitator

for formal assessment in accordance with the deadlines stated in the presentation schedule and the assignment file.

The work submitted to your tutor for assessment will account for 30% of your total course work. At the end of this course, you have to sit for a final or end of course examination of about a three hour duration which will account for 70% of your total course mark.

TUTOR-MARKED ASSIGNMENTS

This is the continuous assessment component of this course and it accounts for 30% of the total score. You will be given four (4) TMAs by your facilitator to answer. Three of which must be answered before you are allowed to sit for the end of course examination.

These answered assignments should be returned to your facilitator. You're expected to complete the assignments by using the information and material in your readings references and study units. Reading and researching into you references will give you a wider viewpoint and give you a deeper understanding of the subject.

1. Make sure that each assignment reaches your facilitator on or before the deadline given in the presentation schedule and assignment file. If for any reason you are not able to complete your assignment, make sure you contact your facilitator before the assignment is due to discuss the possibility of an extension. Request for extension will not be granted after the due date unless in exceptional circumstances.

2. Make sure you revise the whole course content before sitting for the examination. The self-assessment activities and TMAs will be useful for this purpose and if you have any comment please do before the examination. The end of course examination covers information from all parts of the course.

COURSE MARKING SCHEME

Assignment	Marks
Assignments 1 – 4	Four assignments, best three marks of the four count at 10% each–30% of course Marks.
End of course examination	70% of overall course marks
Total	100% of course materials.

Unit Title of Work Weeks

Activity

Assessment

(End of Unit)

Course Guide Week

1. Community Health Needs Assessment Week 1 Assignment 1

2. Strategic Health Planning Week 2 Assignment 2

3. Health Planning Outcomes Week 3 Assignment 3

4. Community Participation Week 4 Assignment 4

5. Monitoring and Evaluation Week 5 Assignment 5

6. Data used in M&E Week 6 Assignment 6

7. Health Systems Theories Week 7 Assignment 7

8. Role of Modern Technology in Public health Week 8 Assignment 8

9. Digital Technology, Gaming and Simulations for Public Health Week 9 Assignment 9

HOW TO GET THE MOST OUT OF THIS COURSE

In distance learning, the study units replace the university lecturer. This is one of the huge advantages of distance learning mode; you can read and work through specially designed study materials at your own pace and at a time and place that suit you best. Think of it as reading from the teacher, the study guide tells you what to read, when to read and the relevant texts to consult. You are provided exercises at appropriate points, just as a lecturer might give you an in-class exercise.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next to this is a set of learning objectives. These learning objectives are meant to guide your studies. The moment a unit is finished, you must go back and check whether you have achieved the objectives. If this is made a habit, then you will significantly improve your chances of passing the course.

The main body of the units also guides you through the required readings from other sources. This will usually be either from a set book or from other sources.

Self-assessment exercises are provided throughout the unit, to aid personal studies and answers are provided at the end of the unit.

Working through these self-tests will help you to achieve the objectives of the unit and also prepare you for tutor marked assignments and examinations. You should attempt each self-test as you encounter them in the units.

The following are practical strategies for working through this course

1. Read the Course Guide thoroughly.

2. Organize a study schedule. Refer to the course overview for more details. Note the time you are expected to spend on each unit and how the assignment relates to the units. Important details, e.g. details of your tutorials and the date of the first day of the semester are available. You need to gather together all these information in one place such as a diary, a wall chart calendar or an organizer. Whatever method you choose, you should decide on and write in your own dates for working on each unit.

3. Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course works. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.

4. Turn to Unit 1 and read the introduction and the objectives for the unit.

5. Assemble the study materials. Information about what you need for a unit is given in the table of contents at the beginning of each unit. You will almost always need both the study unit you are working on and one of the materials recommended for further readings, on your desk at the same time.

6. Work through the unit, the content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the unit, you will be encouraged to read from your set books.

7. Keep in mind that you will learn a lot by doing all your assignments carefully. They have been designed to help you meet the objectives of the course and will help you pass the examination.

8. Review the objectives of each study unit to confirm that you have achieved them. If you are not certain about any of the objectives, review the study material and consult your tutor.

9. When you are confident that you have achieved a unit's objectives, you can start on the next unit. Proceed unit by unit through the course and try to pace your study so that you can keep yourself on schedule.

10. When you have submitted an assignment to your tutor for marking, do not wait for its return before starting on the next unit. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comments, both on the tutor-marked assignment form and also that written on the assignment. Consult you tutor as soon as possible if you have any questions or problems.

11. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in this course guide).

FACILITATORS/TUTORS AND TUTORIALS

Sixteen (16) hours are provided for tutorials for this course. You will be notified of the dates, times and location for these tutorial classes. As soon as you are allocated a tutorial group, the name and phone number of your facilitator will be given to you.

These are the duties of your facilitator: He or she will mark and comment on your assignment. He will monitor your progress and provide any necessary assistance you need. He or she will mark your TMAs and return to you as soon as possible. You are expected to mail your tutored assignment to your facilitator at least two days before the schedule date.

Do not delay to contact your facilitator by telephone or e-mail for necessary assistance if you do not understand any part of the study in the course material. If you have difficulty with the self-assessment activities.

You have a problem or question with an assignment or with the grading of the assignment.

11. It is important and necessary you acted the tutorial classes because this is the only chance to have face to face content with your facilitator and to ask questions which will be answered instantly. It is also period where you can say any problem encountered in the course of your study.

FINAL EXAMINATION AND GRADING

The final examination for EHS 518: Environmental Health Planning will be of 1½ hours duration. This accounts for 70 % of the total course grade. The examination will consist of questions which reflect the practice, exercises and the tutor-marked assignments you have already attempted in the past. Note that all areas of the course will be assessed. To revise the entire course, you must start from the first unit to the twelfth unit in order to get prepared for the examination. It may be useful to go over your TMAs and probably discuss with your course mates or group if need be. This will make you to be more prepared, since the examination covers information from all aspects of the course.

SUMMARY

Environmental Health planning is the course that introduces you to strategies used to determine community health problems and action plan development based on data obtained from community needs assessments.Community health needs assessment is a prerequisite for health planning. It is a means through which you can determine budgetary allocations for health interventions and prepare for future plans. The course also enables you understand the concepts used in health system as well as role of modern technologies in Public health.

On completion of this course, you will have an understanding of the strategic plans used in Environmental health to assess community needs, action plan development, Monitoring and evaluation of environmental projects, Health system sand how modern technologies help in teachings or data management. In addition you will be able to answer the following questions:

• Define the term Community health assessment

• List some strategies adopted in environmental health planning

• Steps for Monitoring and Evaluation

• How health systems work

The list of questions expected to be answered is not limited to the above list. Finally, you are expected to apply the knowledge you have acquired during this course to your practical life.

I wish you success in this course!

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MODULE 1 PRINCIPLE AND METHODS OF PLANNING HEALTH CARE SERVICES PROGRAMS AND FACILITIES

Unit 1: Community Health Needs Assessment

Unit 2: Strategic Health Planning

Unit 3: Health Planning Outcomes

MODULE 1

INTRODUCTION

This module contains three units covering health needs assessment, health planning, community participation in health planning, monitoring and evaluation and health policy formulation. These are the key areas that must be considered for public and environmental Health Planning.

Module Objectives

The learning outcomes of this module is to enable you to explain what constitute health needs assessment and environmental health planning. You will also be able to explain how Monitoring and Evaluation can be performed in Health planning.

UNIT 1 COMMUNITY HEALTH NEEDS ASSESSMENT

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 What is community health needs assessment?

3.2 Purpose of Community health needs assessment

3.3 What are the benefits and challenges of community needs assessment?

3.4 Steps for community health need assessment

3.5 Role of community needs assessment in environmental health planning

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/Further Reading

1.0 Introduction

Community health needs assessment is an essential tool required for development of environmental health planning. It is used to determine what the community has or lack in terms of health care delivery and public health interventions. Data obtained from the assessments are useful in gauging the number of people, households, villages, local governments, state or countries that require environmental health interventions. These

interventions are formulated to improve the wellbeing of the community. For example, public awareness on environmental sanitation, proper refuse disposal, vector control etc.

2.0 Objectives

At the end of this unit you should be able to:

i. Define community environmental health needs assessment (CEHNA)

ii. Discuss the importance of community health needs assessment

iii. Explain the purpose of community health needs assessment

iv. Outline the benefits and challenges in community needs assessment

v. Describe the steps for community needs assessment

3.0 Main Content

3.1 What is community Environmental health needs assessment?

Community Health Needs Assessment (HNA) is a systematic method for reviewing the environmental health issues facing a population, leading to agreed priorities and resource allocation that will improve health. It enables the identification of the major risk factors and causes of ill health. Risk factors may include; poor sanitation, exposure to harmful chemicals and radiation, open defecation etc

Community environmental health needs assessment can be broadly categorized into **three types** based on their respective starting points:

1. Assessments which aim to discover weaknesses within the community and create a solution**.**
2. Assessments which are structured around and seek to address an already known problem or potential problem facing the community**.**

3. Assessments of an organization which serves the community (environmental health office, water treatment plant, community health clinics etc.)

Why do communities need health assessment?

Communities are continuously changing in terms of social, cultural and economic activities. Therefore, programs and policies need to evolve to recognize these changes. Emergence of mobile telecommunication and its environmental health impact on human population is one of the common examples.

Community health needs assessment is a recommended **public health tool** to provide evidence about a population on which to plan services and address health inequalities. Itprovides an opportunity to **engage** with specific populations and enable them to **contribute to targeted service planning** and resource allocation. It also provides an opportunity for **cross-sectoral partnership** working and developing creative and effective interventions.

Benefits of health needs assessment

Benefits from undertaking community health needs assessment can include:

• Strengthened community involvement in decision making

• Improved team and partnership working

• Professional development of skills and experience

• Improved communication with other agencies and the public

• Better use of resources.

What are the challenges of environmental health needs assessment?

Working across professional boundaries that prevent power-or information-sharing

• Accessing relevant data

• Accessing the target population

• Maintaining team impetus and commitment

• Translating findings into effective action.

Steps for community health needs assessment

Step1 ***Getting started***

a. Define population and assessment scope

e.g. environmental health issues affecting people living in your community

b. Assemble the project team

c. Get a broad list of environmental problems identified by the project team

d. Analyse the problems consistently

e. Clear aims & objectives for the project need to be identified.

E.g. assessment of toilet facilities or personal hygiene

f. Identify key stakeholders for heath needs assessment**.**

E.g. who needs to be involved (Village head, community head or clergy men)

e. Adequate resources to conduct the needs assessment.

Before conducting the assessment, you must define the geographic scope of the project. Is it five city blocks or is it your entire neighbourhood? Defining the geographic boundaries of the study area should include assessing the import and export of pollution across your study area's boundaries and the relative contributions of both internal and external sources of pollution and other problems. Some impacts may be imported into your

community from other areas. One example might be illegal dumping of waste from neighbouring areas

As project manager, one of your most important roles is to keep things moving forward. This may not be as easy as it sounds. You must bring together a group of citizens from your community with different skills and interests who are willing to work together, and work with you, to help solve environmental health problems. *Can you keep your community group on track?*

There is no simple answer to this question. We suggest that you consider the following activities to keep your assessment moving forward. As project manager, it is your job to assign these roles to team members or assign them to yourself. Your project team is central to the success of your environmental health assessment. They will collect and analyse information and data to develop a picture of the environmental problems facing the community. The team will also help to identify and select community environmental health improvement strategies. You or someone on your team will need to:

Organize project team meetings (including taking notes at the meetings and distributing these notes to project team members)

• Arrange for meetings with government agencies, potential partners, and other people or groups that are information sources;

• Coordinate data collection and other necessary research;

• Write portions of the problem descriptions, environmental action plans, and other key project documents;

• Speak at public meetings; and

• Undertake other logistical functions as needed.

The above activities are crucial for environmental health planning as data collected will help you during Environmental health planning. Preparing a community environmental health assessment is time consuming, but in the end you will have a tangible plan to help make your community a better place. Along the way, you may encounter some obstacles, but in most cases these can be resolved. To make the process smoother, it is often helpful--but not always necessary - to obtain some financial support.

Below is an example of a questionnaire for collecting information from community members on local environmental health problems;

SAMPLE QUESTIONNAIRE FOR

COLLECTING INFORMATION FROM

COMMUNITY MEMBERS ON LOCAL

ENVIRONMENTAL HEALTH PROBLEMS

AND CONCERNS

• What is the history of environmental pollution problems in our community? Describe.

• Are environmental pollution problems in our community improving or getting worse?

• Do you believe environmental pollution problems in our community have any relationships to health problems in this community? If so, which ones and what health problems?

• Where are the most serious environmental problems located in this community?

• Have customs or habits in our community changed as a result of environmental pollution?

• Have environmental pollution problems had any economic impact on our community or your own well-being?

Figure 1. Sample Questionnaire for Community needs assessment

Step 2 ***Identifying health priority***

i. Map existing community strengths, resources and services.

ii. Collect data.

iii. The determinant factors that might be affecting health conditions can be grouped under five general categories: Social, Economic, Environmental, Biological, and Lifestyle.

After you develop your community vision, identifying community resources is the next important step. You can identify community resources by "mapping" your community's assets. Each community boasts of a unique combination of assets upon which to build its future. And these same assets can be mobilized to address environmental problems facing the community. Assets of a community include individuals, associations, institutions, natural resources and financial sources. Your project team should look carefully at your community and take an inventory of the assets that may be used to conduct the assessment and carry out solutions.

Identifying appropriate information sources, collecting data and putting the data into a usable form are very important steps in preparing a community assessment. The data you will collect will be used in characterizing the different problems and in analysing their impacts on community health. In addition to assembling the necessary information, the process of collecting data will help your project team to highlight data gaps and identify future data collection priorities.

Step 3 ***Assessing a health priority for action***

a. Choosing health conditions and determinant factors with the most significant size and severity impact.

b. Determining effective and acceptable interventions and actions

Once the analysis of the community's problems is complete, the problems must be ranked. Environmental health problems of greatest interest to your project team and the community should be the first issues you examine. The priorities established by this ranking are then integrated with other factors to develop an action plan to address the highest risk problems first. These other factors include the ability of your local government actually to solve a particular problem, local, state or federal laws, community preferences, and the relative ease with which a problem can be solved.

Step 4 ***Planning for change***

i. Clarifying aims of intervention

ii. Action planning

iii. Monitoring and evaluation strategy

iv. Risk-management strategy

Once you have completed the groundwork and gone through the start-up process, you are ready to begin identifying and analysing environmental health issues. Your first key task is to work with the project team to establish a list of clearly defined environmental problem areas to be analysed.

Now that your project team has identified and prioritized your community's environmental health problems, it is time to decide what you can do to remedy them. In the next Unit you will be able to learn about environmental health planning to arrest the identified health problems

Figure 2. Community needs assessment Cycle

4.0 Conclusion

Planning for health care delivery depends on effective community health needs assessment. Better assessments means better planning for health care delivery

5.0 Summary

Community health needs assessment is a prerequisite for health planning. It is means through which you can determine budgetary allocations for health interventions and prepare for future plans.

6.0 Tutor Marked Assignments (TMA)

1. Define the term ‘Community health needs assessment’

2. Why is community needs assessment essential for health planning?

3. Describe how you can assess some health problems faced by your community

7.0 REFERENCE/FURTHER READING

1. Community Environmental Health Assessment Workbook: A Guide to Evaluating Your Community's Health and Finding Ways to Improve It. (2000) Environmental Law Institute, Washington DC, USA.

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4. Krieg, Eric J. (1995). "A Socio-Historical Interpretation of Toxic Waste Sites: The Case of Greater Boston." *The American Journal of Economics and Sociology*. 54(1):1-13.

4. Laituri, M. and Kirby, A. (1994)."Finding Fairness in American Cities? The Search for Environmental Equity in Everyday Life." Journal of Social Issues, 50 (3): 121-139.

4. U.S. EPA, Office of Policy, Planning, and Evaluation. A Guidebook for Comparing Risks and Setting Environmental Priorities. Washington, D.C.: U.S. EPA, 1993.

6. Wenick, I. K., (1995). *Community Risk Profiles: A Tool to Improve Environment and Community Health,* New York: Program for the Human Environment, Rockefeller University, 1995.

UNIT 2 STRATEGIC HEALTH PLANNING

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 Definition of Health Planning

3.2 Strategic Environmental Health Action Plan

3.3 Program planning

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/Further Reading

1.0 Introduction

Strategic Health planning encompasses all strategic and logistic activities aimed at solving community health problems. It involves development of a **plan of action** with a **clear set of objectives, targets and indicators, interventions** and **activities**. Health planning is used to tackle health issues; for villages, Local Governments, States, countries or worldwide after health needs assessments has been concluded.

2.0 Objectives

The main objectives of this unit is to enable you;

i. Define health planning

ii. Learn about strategies in health program planning

3.0 Main Content

3.1 What is health planning?

It is the process of defining **community health problems**, identifying **unmet needs**, surveying the **resources** to meet them, establishing feasible **goals/objectives** and projecting **administrative action** to accomplish the purpose of proposed program. As discussed in the previous unit, community health problems can be identified through health needs assessment so that a solution can be formulated to tackle it.

Health planning requires that sufficient resources are provided based on the identified health problems. Such resources include; manpower, money, material, time and skills. If you identify problems that involve lack of portable drinking water due to environmental pollution for example. You must find a way of providing an alternative source of portable water before clearing the pollutants. It may be a difficult task but proper planning can help you out.

3.2 Environmental Health Strategic Action Plan

Develop an action plan that identifies different strategies that can reduce and control environmental problems. Broad participation by members of the community at this stage is very important. By involving community members, you can be assured that the environmental actions or implementation strategies you adopt reflect the priorities of individuals and groups in the community. It is also important that members of the community are effectively educated about the costs and benefits of proposed strategies so that they can make informed decisions about implementation.

We need to ask ourselves some important questions before initiating a health planning process.

Where are we?- You need to analyze the situations identified and set priorities. The most important problem comes first.

Where do we want to be? -You need to have set of objectives or goals and targets so that desired outcomes can be achieved.

How do we get there? -This involved strategies and activities designed to tackle the health problems. Provide information about the specific actions that will be taken to achieve the objectives.

How do we know that our planning works? -We can know that our health planning works through **indicators** (social, economic and environmental indicators). **Indicators** are specific measures indicating the point at which goals and/or objectives have been achieved. Can you mention some indicators for environmental health planning focused on preventing foodborne diseases?

Developing an Environmental Health Action Plan includes:

- Establish Environmental Goals
- Identify Potential Strategies for Action
- Identify Resources to Help You
- Analyse, Evaluate and Select Strategies
- Prepare a Draft Plan

(a) Establishing Environmental Health Goals

You can begin setting your goals by focusing on your top priority problems as identified in the Setting Your Community's Environmental Priorities. What environmental health problems earned a high priority score? Your problem descriptions area good starting point for developing your environmental goals because they spell out the negative impacts on the

community. If possible, express your goals in terms of rough numbers, such as x% in x years. These numbers will help you determine more easily whether your community is making progress toward controlling each of its priority problems.

For example, the following describes illegal dumping:

Typical domestic garbage (glass bottles, plastic bags and fast food wrappers) as well as old tires, yard waste, and demolition debris is improperly dumped in our community's public areas, neighbourhood parks and abandoned buildings. These illegal dumping activities are a nuisance, pose a public health threat by attracting vermin, and reduce the aesthetic value of our parks and recreational areas.

To address this environmental problem, your project team might develop the following goals:

Goal 1: Reduce the number of illegal dumping sites by X%

Goal 2: Petition the local government to increase fines for illegal dumping

Goal 3: Take direct action to clean up these dump sites, such as organizing a community clean-up day

Once you have developed several goals, find out whether similar environmental goals might have been established under federal, state and local laws and regulations. For example, do federal, state or local laws require that drinking water achieve specific water quality standards by a certain deadline? The answer to this question may help you to make an argument that the government should reduce contamination of your community's drinking water by a certain time.

(b) Identifying Potential Strategies for Action

Once the goals have been developed, the project team should identify specific implementation strategies that can help achieve these goals. You may want to begin this

process by having a roundtable discussion among your project team about various implementation strategies. Consider inviting other interested community residents to attend this meeting.

Public education and technical training of agency staff are important to the success of your overall action plan. Public education includes preparing and distributing brochures, writing newspaper articles, giving radio interviews and holding public information meetings. Technical training can teach local government staff or businesses about how to implement a program or operate a facility cost-effectively while reducing negative impacts on the environment and public health. In addition, Community programs activities that involve either collective or individual actions by community members to address environmental problems can also be adopted.

(c) Identifying Resources to Help You

The individuals and institutions identified there may assist you in whatever strategies you and your project team decide to implement.

Table 1: **Priority setting sheet**

	Criteria					**Score**
Environmental Problem	Risk-based Ranking	Community Preference	Legal/Regulatory Requirements	Governmental Authorities	Cost/ Difficulty to Change	
Example: Airborne Toxins	Medium	+	+	+	-	High
Example: Drinking Water	Medium	-	+	+	-	Low

(d) Analyse, Evaluate, and Select Strategies for Action

Your project team's initial list of strategies may have produced a large number of possibilities. Probably not all of your strategies for action can be executed. Due to your limitations of time, finances, and technical resources, it is important for your team to evaluate each strategy against a common set of criteria to determine which strategies are really feasible. You might consider the following evaluation criteria:

• **Cost**: What are the total costs associated with a particular strategy over its lifetime?

• **Economic Benefits**: What are the economic savings and other benefits associated with a strategy?

• **Effectiveness:** How well does a strategy reduce or eliminate health, quality of life and environmental impacts?

• **Time frame:** How much time will it take to implement a strategy?

• **Acceptability:** Does a strategy have support from your community, the general public or the local government?

• **Funding**: Are there reliable sources of funding and have they been secured?

Legal Authority: If the strategy requires action by the federal or local government, does it have the legal authority to act?

After selecting the evaluation criteria and collecting necessary information on your strategies for action, your project team should analyse each potential strategy. Next, your project team should develop a chart using Analysing, Evaluating and Selecting Strategies

Worksheet (shown below), for each environmental goal that sets different strategies against the criteria to assist in the selection process.

In selecting strategies for action, you will find that a mixture of strategies that achieve both short-term and long-term results and start with small, achievable and visible progress have the strongest chances of success. Your project team should try to approach the process of choosing these strategies in an open manner, addressing advantages and disadvantages, and arrive at a decision by consensus.

(e) Prepare a Draft Community Environmental Action Plan

Once your project team has selected strategies for action, the team and any partners you have enlisted (such as established environmental organizations, universities, and/or local government officials) should develop a written community action plan. Your plan should explain your recommended strategies to address your community's environmental problems. It should also identify the specific tasks that need to be accomplished, who should be responsible for completing each task, the timetable for completing each task and associated costs. Your action plan also should include measurable goals with specific timeframes for reducing pollution or improving conditions in your community. These goals will serve as benchmarks or environmental health indicators for how well each strategy has succeeded.

Armed with your community action plan, you have identified the environmental threats, strategies to reduce the threats and how to implement the strategies. Now it is time to put your plan into action. Everyone deserve a cleaner, healthier environment.

4.0 Conclusion

Planning for health project is time consuming but rewarding. It requires a team work, community mobilization and sources of funding. In addition, some critical steps should be followed serially to avoid errors. Health planning is meant for effective health care delivery through provisions of facilities that the communities lack.

5.0 Summary

Health planning requires that sufficient resources are provided based on the identified health problems. Strategic action plan are developed based on data obtained from community needs assessments with goals and objectives clearly defined.

6.0 Tutor Marked Assignments

1. What is health planning?

2. Explain how you can formulate an action plan for pollution control in your community

7.0 Reference/ Further Reading

1. Green L, and Kreuter M. (2005). *Health Program Planning: An Educational and Ecological Approach*. 4th Edition. New York, NY: McGrawhill.

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UNIT 3 COMMUNITY PARTICIPATION IN HEALTH PLANNING

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 What is community participation?

3.2 Passive and active community participation

3.3 Benefits of Community Participation

3.4 Participatory strategic plan

3.5 Participatory action research

3.6 Participatory Vulnerability Analysis

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/ Further Reading

Introduction

Health planning is established for communities and therefore, their participation may make your project achieve its objectives. Lack of compliance by the communities create a huge obstacle to public health project. Success of public health interventions rely on community participation and cooperation.

Objectives

This unit aimed at achieving these objectives:

-Introduce the concept of community participation in health programs

-Highlight the importance of community participation

What is community participation in Health Planning?

Active involvement of the local population in the decision making and implementation of development projects.Participation is best thought of as a continuum with various stages.

At one end of the continuum, the relationship between the consumer and the service is service/organisation led and centres on the communication of information.

It then progresses through the consultation stage with its joint consideration of issues, to true partnership (which includes the sharing of decision making) and ultimately to consumer/community control. Participation can be low or high depending on the cooperation given by the communities. Below is the ladder of community participation

Ladder of community Participation

Degree	Participants' action	Illustrative mode
High ↑	Have control	Organisation asks community to identify the problem and to make all the key decisions on goals and means. Willing to help community at each step to accomplish goals.
	Have delegated	Organisation identifies and presents a problem to the community, defines the limits and asks community to make a series of decisions, which can be embodied in a plan it can accept.
	Plan jointly	Organisation presents a tentative plan subject to change and open to change from those affected. Expects to change plan at least slightly and perhaps more subsequently.
	Advise	Organisation presents a plan and invites questions. Prepared to modify plan only if absolutely necessary.
	Are consulted	Organisation tries to promote a plan. Seeks to develop support to facilitate acceptance or give sufficient sanction to plan so administrative compliance can be expected.
Low ↓	Receive information	Organisation makes a plan and announces it. Community is convened for informational purposes. Compliance is expected.
	None	Community not involved.

Passive Participation

- Passive participation includes complete cooperation on the part of the community in the implementation of the program to achieve the objectives and targets set for the program
- Does not ask of the community contributions in terms of resources, cash, or labor
- Education aims at motivation for completion of the tasks determined by the agency

Active Participation

Active participation—Inputs are provided by both the government and local population

- The importance of identifying appropriate community members to take a lead in community-based activities.
- Only when the intervention is seen as belonging to them can they be expected to take responsibility for maintaining the activities and improving upon them

Benefits of Community Participation

- Increased ownership, support and responsibility
- More likelihood of, and sustainability for, behavior change
- More cost-effective programming
- Better response to community needs and concerns
- More culturally appropriate strategies and messages
- Increased coverage and access to information and services
- Increased demand
- Increased advocacy for service and policy change
- Increased success (results and sustainability)

Participatory Strategic Planning

PSP is a derivative of *Strategic Planning*. It comes from the military and corporate sectors and has been specially adapted for communities. The PSP approach supports the belief that any one (even illiterate, down trodden communities) have the capacity to look into their past

and look at their present situation and then state what they aspire for/ want/ need…etc. Simply stated, it means the community is able to say:

* Where we were?

* What we want to be?

* Where we want to be?

* What is the path to take?

* How do we want to reach there on a specific time frame?

Participatory Strategic Planning consists of four stages:

1. First, the group determines their vision for the future of the organisation or community.
2. Second, they describe the SWOT in reaching their vision.
3. In the third stage they move on to agree on the methods that will help them get past the obstacles and reach the vision.
4. The final stage is about implementation planning e.g. 'What shall we do in the first year?', and finally, 'What shall we do in detail in the first 3 months?'

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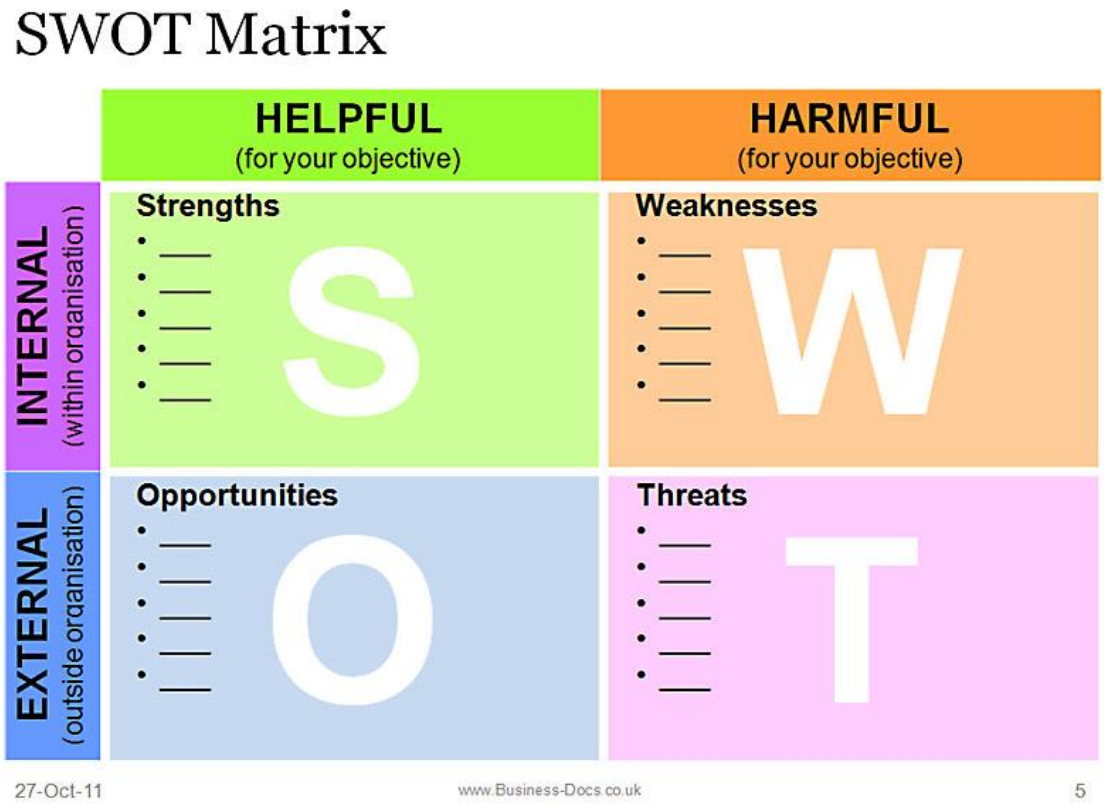

Figure 3. SWOT Matrix

Participatory Action Research

Participatory Action Research is a combination of participatory research and action research. Participatory research combines equal responsibilities between researchers and community (participants).Action research uses findings to strategize and address community issues. This method is unique because it regards participants as experts based on their lived experience in issues at hand. Community members must have an unrestricted role in PAR — they themselves are active researchers in all stages of the process, including how the community should proceed with the research outcomes.

The community participates fully in:

- Investigation
- Analysis
- Planning Appropriate and Joint Action
- Implementing the Program
- Monitoring and Evaluation
- Mid-course Corrections

Typical Stages in PAR

Phase	**Action**
Action	Establish relationship and common agenda with all stakeholders Collaboratively decide on issues
Reflection	On research design, ethics, knowledge and accountability
Action	Build relationships Identify roles and responsibilities Collectively design research processes and tools Discuss potential outcomes
Reflection	On research questions, design, working relationships and information required

Action	Work together to implement research and collect data Enable participation of all members Collaboratively analyse findings Collaboratively plan future actions
Reflection	On working together
Action	Feeding research back to participants, plan for feedback for process and findings
Reflection	Evaluate action and reflection processes
Action	Collectively identify future research and impact

Participatory Vulnerability Analysis

PVA is a systematic process that involves communities and other stakeholders in an in-depth examination of their vulnerability, and at the same time empowers or motivates them to take appropriate actions. The overall aim of PVA is to link disaster preparedness (droughts, floods, state oppression on a large scale) and responses to long-term development.

PVA is a MULTILEVEL process: the community, the district, and national/international level.

- **Community level:** This is a unique way of allowing poor and marginalised people to have a say in policies that affect them.

- **District level:** to analyse other causes of vulnerability which may not fall within the community setting.
- **National level:** a holistic analysis of vulnerability requires national actors to see the implications of their policies on the vulnerability of the people.

It involves;

- Community meetings
- Discussion sessions and analysis
- Training of local facilitators
- Participatory and reflection approaches
- Stakeholders and focal group meetings
- Local level advocacy and lobbying
- Documentation and liaison
- Studies on selected issues

4.0 Conclusion

Community participation serve as the cornerstone for public health projects. It requires a lot of time for predations and undoubtedly stressful. However, it is rewarding to both the communities and health workers.

5.0 Summary

Community Participation progresses through the consultation stage with its joint consideration of issues, to true partnership and includes the sharing of decision making. Participatory Action Research is unique because it regards participants as experts based on

their life experiences in issues at hand while Participatory Vulnerability Analysis is a systematic process that involves communities and other stakeholders in an in-depth examination of their vulnerability, and at the same time empowers or motivates them to take appropriate actions.

6.0 Tutor Marked Assignment

1. What is community Participation?

2. Define what is meant by ‘active participation

3. Write on any of the following;

i. Participatory Vulnerability Analysis

ii. Participatory Action Research

7.0 Reference/ Further Reading

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MODULE 2 HEALTH PLANNING OUTCOMES

Unit 1 Monitoring and Evaluation

Unit 2 Data Used To Monitor and Evaluate Health Programs

Unit 3 Evaluating Complex Programs

Introduction

A successful health planning provides positive outcomes which can be identified through improvements in wellbeing of the community. To know whether a health planning program has been effective in solving issues faced by a community, you must monitor and evaluate it.

Module Objective

The main objectives of this module is to describe how Environmental health programs can be monitored to ensure implementation and also to determine its effectiveness.

UNIT 1 MONITORING AND EVALUATION

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 What is Health Project Monitoring and Evaluation?

3.2 Uses of Health project Monitoring

3.3 Some Questions Answered by Health Project Monitoring

3.4 Components of Monitoring and Evaluation

3.5 Importance of Monitoring and Evaluation

3.6 Steps in conducting Monitoring and Evaluation

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/ Further Reading

1.0 Introduction

Monitoring and evolution helps you to proceed, modify or halt a health planning program. It is a systematic and continuous process of following and keeping track of indicators in order to ensure that the project/program is proceeding according to plan and modifying the plan as necessary. In other words, the outcomes of health planning is determined through monitoring and evaluation.

2.0 Objectives

This Unit will enable you to:

i. Define Monitoring and Evaluation (M&E)

ii. Purpose of M&E

iii. Answer some questions related to M&E

iv. Describe the components of M&E

v. State the importance of M&E

vi. Learn how to conduct M&E

3.1 **What is Project Monitoring and Evaluation**?

Project M&E is a deliberate and a sustained effort to assess the project during the course of its implementation. It involves a **regular follow-up** of the implementation of planned activities.

Some important terminologies are regularly used in describing the processes of M&E. These terminologies are useful during documentation of your M&E activities.

- Inputs- the materials, goods and actions necessary to carry out the primary project activities
- Indicator:- an objectively verifiable measurement which reflects the activity, assumption, or effect being measured
- Outcomes – the intermediate effects resulting directly from project outputs that may be necessary to achieve a desired impact
- Outputs – the provision of project goods and services to the target population. The primary project activities

3.2 Uses of health project Monitoring

The uses of project monitoring are summarized below;

- Routine tracking of programs using input process and output data that are collected on a regular ongoing basis.
- Used to assess whether or not planned activities are carried out according to schedule
- Reveal the extent to which the program is progressing towards identified targets and services are being utilized
- An abrupt or unexpected change in monitoring data may trigger the need for a more formal evaluation of the activities

3.3 Some Questions Answered by Health Project Monitoring

Some of your project questions can be answered through monitoring. If the questions mentioned below can be answered by you at the end of this Unit, we can assure you that the purpose of your project monitoring can be achieved.

- *Are the projected outputs being met?*
- *Are we heading in the right direction?*
- *Are we in good time?*
- *Are the indicators appropriate?*
- *Did you identify the correct problem and has this problem changed?*
- *Are the intervention strategies appropriate to the target population?*
- *What can be improved in our project?*
- *Are we utilizing resources efficiently?*

- *What are the strengths and weaknesses of our project?*
- *What updates do we need to have as stakeholders?*

3.4 Components of Monitoring and Evaluation

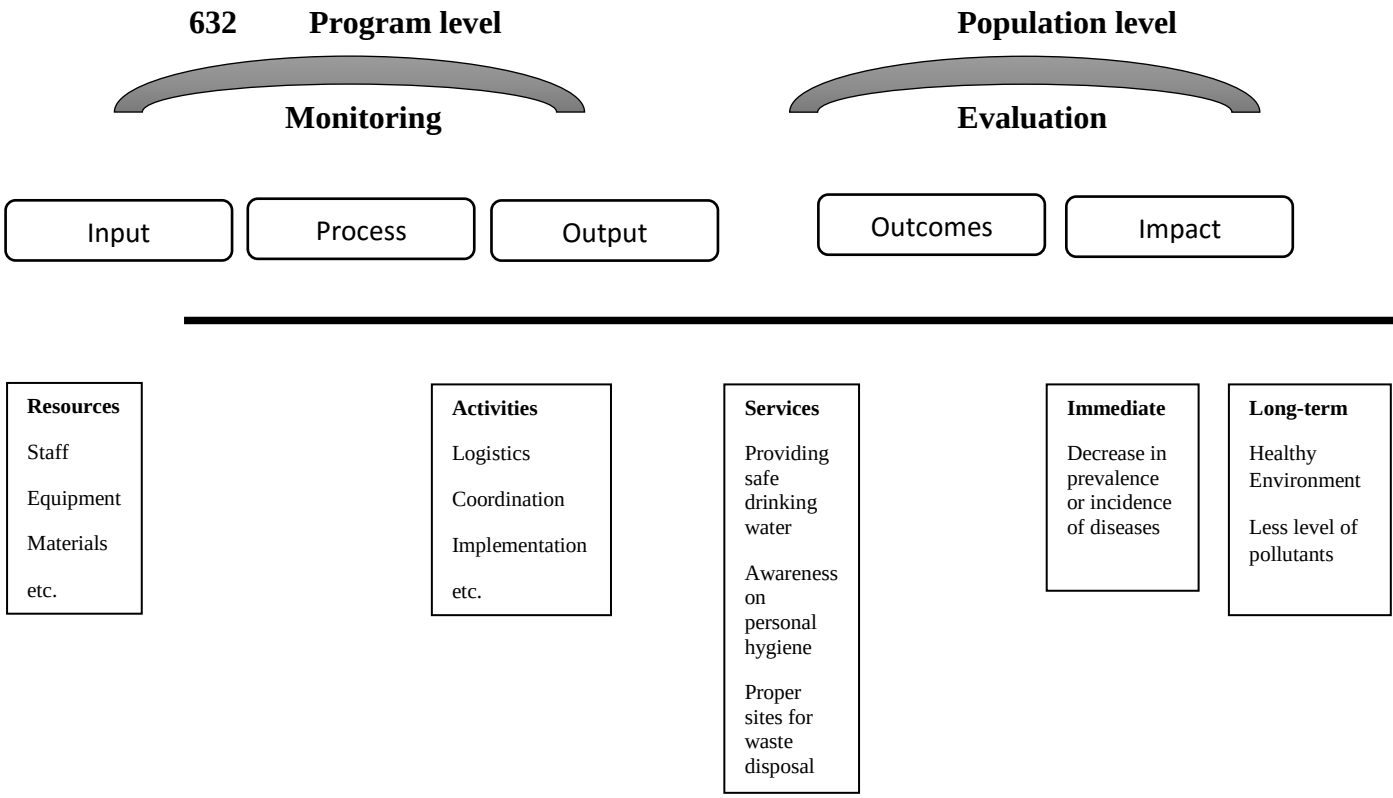

Fig 4: Monitoring and Evaluation components for Environmental health program

The above diagram highlight the major components of M&E. Monitoring deals with inputs (resources) needed for the health project and the activities carried out such as Logistics, coordination and implementation. You have to know that the major aim of your health planning is to have a positive output. You can gauge the output through monitoring to decide whether the project continues or otherwise.

On the other hand, Evaluation encompasses analytics done to gauge outcomes and impacts. It is important to know the effectiveness of a program in solving community health problems (remember that the problems were identified through community Health needs assessment). A good health planning will always ensure a long-lasting solution to the community health needs due to its high impact. Evaluation of your health project will provide an answer regarding the level of its impact on community health needs.

3.5 Importance of Monitoring and Evaluation

Monitoring and evaluation enables you to ensure smooth running of an intended health project. It also helps you to systematically assess the effectiveness and efficiency of the project achievements based on the set objectives. Below are some of the importance of M&E in health planning;-

3.5.1 Importance of Monitoring

- Assesses progress against set objectives/outputs
- Supervises implementation
- Assesses effectiveness of implementation strategies
- Identifies and documents critical milestones
- Identifies new issues and/or unforeseen circumstances that may be obstacles
- Identifies necessary corrective measures (strategy modification)
- Identifies positive aspects of the program for re-enforcement
- Verifies information first – hand for immediate feedback
- Strengthens relationships between collaborators (donors, implementers and beneficiaries)

- Serves as a motivation to implementers and beneficiaries
- Provides an opportunity to verify whether resources are being used effectively (cost-effectiveness)
- Identifies differences between knowledge and practice and aids in planning training accordingly

3.5.2 Importance of Evaluation

- It is a means of problem verification
- It maximizes utilization of resources
- It identifies the strengths/weaknesses of the project
- It provides information for planning and re-planning
- It provides learning opportunities
- Provides satisfaction to the various stakeholders
- Provides an opportunity for problem solving
- A basis for maintaining and/or improving the existing strategy
- It measures the effectiveness of the project
- It's a check to whether the project was implemented according to the detailed plan/design

Activity: What hinders project monitoring and evaluation in today's practice?

Try to provide some answers to the above question

3.6 Steps in conducting Monitoring and Evaluation

Numerous steps are required for a successful M&E for health projects. Here are some of the most important steps required for M&E activities.

3.6.1 Steps for Monitoring

- Review existing information related to the project
- Make a conceptual framework of the project for monitoring
- Identify monitoring goals and objectives
- Identify indicators
- Determine which categories of workers, supervisors or others will be responsible for the collection of each category of monitoring data
- Develop a timetable for frequency of monitoring
- Develop/strengthen a management information system
- Develop monitoring instruments
- Conduct monitoring activities
- Analyze monitoring data
- Write a report
- Make recommendations
- Implement recommendations
- Identify new indicators based on the recommendations
- Modify the monitoring system if necessary
- Continue to monitor

Monitoring a project requires that you review existing data about the project. This will provide you with information such as when the heath project begins as well as its goals and objectives. Formulate a conceptual frame work on how your monitoring activities will proceed and determine the instrument required. You are required to write a report at the end of the monitoring activities. The report is required during the evaluation exercise. Make recommendation on how to improve the health project in you report.

3.6.2 Steps for Evaluation

Steps for conducting an Evaluation for health project are categorized into the following phases;

Phase 1: Planning the evaluation

- Determine the purpose of the evaluation
- Describe the program
- Develop/refine conceptual framework
- Assess your own limitations and strengths
- Put together an evaluation team including stakeholders

Phase 2: Selecting a proper evaluation Method

- Identify evaluation goals and objectives
- Formulate evaluation questions and sub-questions
- Decide on the appropriate evaluation design
- Develop an evaluation schedule
- Develop a budget for the evaluation

Phase 3: Collecting and analysing information

- Develop data collection instruments
- Pre-test data collection instruments
- Undertake data collection activities
- Analyze data
- Interpret data

Phase 4: Reporting Findings

- Write the evaluation report
- Decide on the method of sharing the evaluation results
- Disseminate evaluation report

Phase 5: Implementing Recommendations

- Develop a new/revised implementation plan in partnership with stakeholders
- Monitor the implementation of evaluation recommendations and report regularly on the implementation process.

Health facilities provided for community health needs should be evaluated to assess its efficacy and reliability. It must serve a purpose for which it is installed. Below are an example questions you are expected to ask during facility evaluation.

Table 2: Facility evaluation Questionnaire

Pollution Prevention Facility	**Yes**	**No**	**Not Applicable**
Is Regulated Medical Waste (pipettes, needles) generated at your facility?			

Has your current disposal policy for RMW been Reviewed by Environmental Health & Safety?			
Does your facility have a current disposal policy for expired chemicals or products?			
Has the disposal policy been reviewed by EH&S?			
Comments			
Does your facility have an active compost area on site?			
Waste Disposal Facility	**Yes**	**No**	
Does your facility have an active construction /demolition area on site?			
Does your facility have inactive waste disposal areas on site?			
Is EH&S aware of any waste disposal areas currently used on site?			
Is EH&S aware of any previously used disposal areas on site?			
Comments			

4.0 Conclusion

Monitoring and evaluation decides the fate of your health project. If the program is found to be effective in solving the problems identified through Community health needs assessment then it continues. Sometimes the project can be modified but if found to be ineffective then it must be stopped. Monitoring and evaluation saves time and money.

5.0 Summary

Monitoring and evaluation is an important tool in public health used to monitor progress of any health project. Effectiveness of health projects are determined through evaluation. Your M&E may help in decision making on whether a project can continue or not. Inputs, process, outputs, outcomes and impact are five fundamental components of M&E that must be

outlined for any health project to be successful. Steps for conducting M&E such as data gathering, identification of goals and objectives of health project, equipment requirements and report writing should be clearly highlighted during documentations.

6.0 Tutor Marked Assignment

1. Compare and contrast between monitoring and evaluation

2. Mention and describe the four phases of evaluation

3. List any six importance of M&E

7.0 Reference/ Further Reading

1. Gudda P. (2011). *A Guide to Monitoring and Evaluation.* Author House Publications Inc.

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UNIT 2 DATA USED TO MONITOR AND EVALUATE HEALTH PROGRAMS

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 Quantitative Versus Qualitative Data

3.2 Differences between quantitative and qualitative methods

3.3 Use the Data to Make Decisions and Review the M&E Plan

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/ Further Reading

Introduction

Data for monitoring and evaluating PHE (Population-Health-Environment) programs come from a wide range of stakeholders and sectors and can be either quantitative or qualitative. Monitoring data are often collected on a routine basis from the program records, service delivery points, or participatory focus groups.

Objectives

The main objective of this unit is to:

-Enable you understand the importance of data in M&E.

-Differentiate between Quantitative and Qualitative data

- Enable you Evaluate complex health projects

Quantitative Versus Qualitative Data

Mixing qualitative and quantitative data sources can strengthen the evidence for achieving program objectives and goals. Donors who require certain indicators often request quantitative information (e.g., numbers, percentages, rates, ratios); however, PHE programs benefit by supporting these numbers with qualitative evidence to tell the complete story of program integration. Due to the specific questions that arise in implementing integrated programs, special care should be taken to select methodologies that provide information about processes and outcomes coming from qualitative and quantitative methods. The Table below explores several differences between the two types of methods.

Table 3: Differences between quantitative and qualitative methods

Quantitative Methods	Qualitative Methods
Describe how many and how much	Describe how and why
Use predominately closed-ended questions	Use predominately observations and open-ended questions
Provide numerical data and statistics	Provide data on perceptions and beliefs as well as descriptions of conditions and care
Require large samples, preferably selected at random	Permit more limited samples, generally not selected at random
Yield more superficial responses to sensitive topics	Offer more in-depth responses on sensitive topics
Produce results that can be generalized to the target population or ecosystem	Produce results that apply only to the segment of the population or specific sub-area of the ecosystem that is studied

Program-Based versus Population-Based and Habitat-Based Data

It is important to distinguish between program-based and population-based or habitat-based measures.

Program-based indicators usually measure inputs, processes, and outputs and are often collected through routine monitoring.

Population- and **habitat-based** indicators usually measure outcomes and some outputs and are most often, though not exclusively, collected through evaluation.

• **Program-based** data consist of information available from program sources (e.g., facility based/community-based service statistics, project records of trainings and educational sessions, administrative records) or information that can be obtained from on-site collection (e.g., observation, client-provider interaction, interviews with farmers, NRM committee functions).

Where such systems are functional, routine information systems are the primary source of thistype of information. **Program-based** information is very important for understanding program performance and the type of outputs programs achieve. When data on the entire regional populations are available as a denominator, estimated **program-based** information can reflect service coverage.

• **Population-based** data aim to evaluate effects on the general population. This term can also refer to a smaller geographic region (e.g., the target area for the specific project) if the data are drawn from a representative sample.

• **Habitat-based** data refer to evaluation of the larger target area of the environment. Rather than program-based measures (e.g., trees planted, improved practice sessions provided, enforcement officers trained), **habitat-based** measures represent outcomes on the entire habitat (e.g., forest regenerated, area under improved management, species abundance).

Use the Data to Make Decisions and Review the M&E Plan

M&E should promote a process of using information. The M&E plan is a living document that is only useful if it reflects project implementation and reporting needs. Data should be used to adapt the project accordingly; regular monitoring can lead to the necessity to develop special studies and evaluations to answer implementation questions. Additionally, data can be used periodically to make midcourse corrections to program implementation, such as providing more funds for an activity (e.g., a training or workshop) that has a higher demand than expected, to replace an activity that is not working, or to create more culturally appropriate IEC materials.

The M&E working group should periodically review the plan and update it based on the successes and shortfalls of system performance. Monitoring and evaluating a project should allow users to see operational problems and program designs that need correction. The group should solicit feedback from data gatherers, processors, and information users. The group should also communicate with project staff and stakeholders about how data can be used to inform the direction of project implementation

4.0 Conclusion

Data gathering is an essential tool for successful M&E in any health project. Collected data will enable you plan for next line of action in your project.

5.0 Summary

Mixing qualitative and quantitative data sources can strengthen the evidence for achieving program objectives and goals. The M&E plan is a living document that is only useful if it reflects project implementation and reporting needs.

6.0 Tutor Marked Assignment

1. Distinguish between qualitative and quantitative data

2. Describe how data collection will help you in M&E

7.0 Reference/ Further Reading

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UNIT 3 EVALUATING COMPLEX PROGRAMS

1.0 Introduction

2.0 Objectives

3.0 Main content

3.1 Evaluation Method for complex programs

3.2 contributing Analysis

3.3 Most Significant Change

3.3 Outcome Harvesting

3.4 Participatory Evaluation

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/ Further Reading

Introduction

PHE programs often include many types of stakeholders and cover several contextual areas. They are often developed and executed within dynamic communities using integrated program models. Using only traditional methods for evaluating a program is often time-consuming, expensive, and insufficient in describing all the complex interactions between actors and outcomes.

Objectives

-The main objective of the unit is to highlight some of the methods used in evaluating complex health projects.

-It will also enable you to identify an appropriate method of choice for a complex health program

EVALUATION METHODS

Often, PHE programs have nonlinear or unknown outcomes or involve multidirectional pathways toward intended or unintended outcomes. These programs are often referred to as "complex" and require innovative ways of evaluating their outcomes and impacts.

Many PHE programs include the implementation of integrated programs that were historically soiled.

Many PHE practitioners not only find these complex programs difficult to measure, but also find that more traditional evaluations, such as experimental designs, are often not comprehensive enough to capture all the intended and unintended outcomes and impacts of PHE programs. There is an emerging interest and discipline in methods of evaluating the outcomes and impacts of complex programs.

Contribution Analysis

Most often, the reasons for conducting an impactor outcome assessment or evaluation is to provide answers about the efficacy and efficiency of a program: Does it work? To what extent are the outcomes we see related to the intervention or program? Contribution analysis, a theory-based evaluation method, provides a different option for exploring these questions when a traditional, experimental or quasi-experimental design is not possible, feasible, or desired. National or population-level impacts or long term outcomes, such as behavior change, often cannot be understood or quantified for many years after the intervention, yet

many donors and beneficiaries are eager to understand how the program is or is not meeting its intended objectives. Contribution analysis attempts to provide clear pathways from inputs to outcomes and provides information on whether a program is likely to produce the intended impacts. Mayne theorized that this method could be utilized to "address attribution through performance measurement" (Mayne, 1999). In contribution analysis, using a well-developed theory of change along with an assessment of all alternative or counterfactual theories for the outcome, one can create a "performance story" that can relatively assess a plausible attribution (Kotvojs & Shrimpton, 2007). Mayne suggests the main steps to carry out a contribution analysis:

• Develop a program logic/theory of change that clearly outlines the suspected association between inputs, processes, and outcomes.

• Seek evidence for why the outcomes and outputs could exist within your theory of change.

• Seek all alternate explanations (i.e., counterfactuals) that could explain the program logic and could contribute to the program outputs and outcomes, making sure to include all outside actors or influences.

• Gather any existing evidence on your prescribed theory of change.

Most Significant Change

The most significant change (MSC) method, while not entirely new, has more recently gained traction as a valid and rigorous qualitative evaluation technique. The technique was developed by Rick Davies in the1990s to help evaluate a rather complex rural program in Bangladesh. Rather than focusing on measuring precise inputs, processes, and outputs, this method focuses on outcomes and impacts. The MSC method is highly participatory in nature in that stakeholders themselves are involved in data collection, analysis and sometimes dissemination. Additionally, it is a purely qualitative technique that does not employ any

quantitative data or methods. This technique can be used as a monitoring tool as well as an evaluation tool depending on the frequency it is utilized and the depth of analysis completed. The MSC method involves, at its core, stakeholders deciding what the most significant change has been on outcome- and impact-level indicators (either predefined or not defined) in a participatory manner to encourage open exchange, dialogue, and consensus building. One of the most substantial added values of the MSC method is that it often can uncover important outcomes and impacts (both positive and negative) that may never have been thought of or envisioned before implementation. The MSC method involves several iterative steps:

• Establish "domains of change" to explore.

• Set parameters on dates, times, and contexts for reports/stories.

• Collect data/stories from stakeholders and beneficiaries.

• Review, synthesize, and collate the stories.

• Validate and verify the stories and provide feedback to stakeholders on the stories that have been gathered.

• Conduct a "secondary analysis" of the collected stories and data to identify emergent themes and counterfactuals.

• Revise and disseminate.

• Use the data for program improvement or evidence-based decision making.

Outcome Harvesting

Outcome harvesting is defined as the identification, formulation, analysis, and interpretation of outcomes to answer useful questions (Wilson-Grau, 2013). This method first collects

evidence of what has been achieved and then works backwards to determine whether and how the project contributed to the change, rather than measuring progress toward predetermined outcomes or objectives (as other evaluation methods do). Outcome harvesting is a fairly new approach to understanding complex programs, projects and policies that aim to capture outcome-level indicators as well as the theories of change that contributed to the outcomes. This method involves six major iterative steps:

• Stakeholders identify useful questions that will help guide the process of the harvest.

• Through various primary and secondary sources, the "harvester" will gather data (e.g., through interviews, data sources, observations) to understand what changes have occurred due to the "intervention" or "program" and why beneficiaries feel those changes occurred.

• The "harvester" creates outcomes descriptions, based on the information gathered during steps 1and 2, with the program stakeholders.

• The information is validated.

• The data are analyzed and interpreted.

Participatory Evaluation

In addition to including field-based teams and other internal stakeholders in participatory planning and data collection methods, there are several methods for integrating external stakeholders in the M&E data collection and analysis process. Participatory evaluation is a broader term and method than those described above and includes many qualitative participatory methods such as social and community mapping, scoring and ranking, storytelling, social network analysis, and diagramming. Many of these innovative and emerging qualitative approaches have been borrowed from other disciplines and found tobe useful for monitoring and evaluating complex, integrated programs such as PHE. However,

participatory evaluation can also be used to collect quantitative data through the participatory practice of designing surveys, collecting data, and consensus building around results and analysis. Increasingly, program beneficiaries and the communities in which they live are included in the entire programming process, beginning with program inception and ending with data dissemination and use.

Participatory evaluation is also useful for analysis and dissemination in that beneficiaries of the program/intervention, community members, and other stakeholders can assist in validating key findings and in finding culturally appropriate ways to disseminate and present key findings relevant to and appropriate for different audiences.

4.0 Conclusion

Complex health projects require innovative ways of evaluating their outcomes and impacts. Many forms of complex health projects are established for easy evaluation.

5.0 Summary

There is an emerging interest and discipline in methods of evaluating the outcomes and impacts of complex programs. Contribution analysis attempts to provide clear pathways from inputs to outcomes and provides information on whether a program is likely to produce the intended impacts. Participatory evaluation is a broader term and method than those described above and includes many qualitative participatory methods such as social and community mapping, scoring and ranking, storytelling, social network analysis, and diagramming.

6.0 Tutor Marked Assignment

Write in detail on Outcome harvesting method used in evaluating complex health Projects

7.0 Reference/ Further Reading

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Pielemeier, J. (2005). Review of population-health-environment programs supported by the Packard Foundation and USAID. Retrieved from *ttp://www.ehproject.org/PDF/phe/ll-packard2.pdf*

MODULE 3 HEALTH SYSTEMS

Unit 1 Health Systems Theories

Unit 2 Role of Modern Technology in Public health

Unit 3 Digital Technology and

MODULE 3 Health Systems

Introduction

Throughout the course of human evolution, humans have been solving complex problems. There are multiple, hierarchical, and complex systems that exist in the world, which make problem solving challenging. However, solving problems by breaking down large complex health problems into smaller manageable portions will enable us to plan and execute interventions successfully.

Module Objective

The main objectives of this module is to describe how complex health problems can be categorised into segments and then integrated in health systems for easier monitoring and evaluation.

UNIT 1 HEALTH SYSTEM AND THEORIES

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 What is health System?

3.2 System Theories

3.3 Significance of Systems Theory to Health Management

3.4 Definition of Key Terms Used in Health Systems

3.5 Types of Health Systems

3.6 System Characteristics

3.7 Health Organization as a System

4.0 Conclusion

5.0 Summary

6.0 Tutor Assignment

7.0 Reference/ Further Reading

1.0 Introduction

A system is a collection of independent but interrelated elements or components organized in a meaningful way to accomplish an overall goal. The function of any system is to convert or process materials, energy, and/or information (inputs) into a product or outcome for use within the system, or outside of the system (the environment) or both. Integrated health care

system used by the Federal ministry of Health helps different health institutions to work together to achieve a common goal. Therefore, it is important for us to learn about how health care systems operate globally. It can help you during health planning and implementations.

2.0 Objectives

- Lean about Health Systems
- Identify different forms of health systems
- Learn how health systems operates

3.0 Main Content

3.1 What is health system?

A *system* is defined as a regularly interacting or interdependent group of items forming a unified whole. It can also be defined as a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose. The ***Health System*** is a system with various levels of complexities. It involves decision makers, policy makers, and groups of people in institutions, organizations, and agencies that shape the way in which health care is delivered to society. The Health system also encompasses different levels of care, from providing services for the prevention of diseases, to providing palliative/end-of-life care.

The function or purpose of the elements within the group must be clearly defined. For example, a facility for pollution prevention can be integrated with those supplying drinking water into a system to ease monitoring of pollutants levels relative to water contamination.

Understanding how systems work, and the various factors that affect a system, have been an area of interest for leaders and researchers in the field of social sciences, biology, human and organizational psychology, business, and in other disciplines.

3.2 Systems Theories

The world we live in is a complex system composed of subsystems that interact among each other with each having clearly defined boundaries and coherent dynamics. Systems theory was developed by biologist Ludwig von Bertalanffy in the 1930s to simplify world complexity to human mind and make it more understandable. The development of the theory came as a result of the author's perceived need for a theory to guide research in multiple fields. His theory helped to provide a common framework that created shared and common language that scientists from different disciplines can use to communicate their findings. Simply put, systems theory is used to understand how things around us work.

Systems theory looks at the world as a system composed of smaller subsystems. Systems as a representation of life phenomena are used by humanity in everyday life to describe the functioning of these phenomena. For example, a hospital is a system with inputs, processes and outputs. The hospital itself is a component of a larger system, health care system. The health care system, banking system, educational system, judicial system and other systems comprise the socio-economic-political system within which we live.

3.3 Significance of Systems Theory to Health Management

Systems theory can be used to clearly and concisely understand health care structures, processes and outcomes processes and their interactions within a health care system. Systems theory can be used as a framework to describe the components of systems and the relationships between these components, the boundaries of the system, the goals of the system, and system's ability to change and adapt in response to internal and external forces. Systems theory and thinking can help us understand how health care organizations and systems behave and it allows us to clearly assess, visualize, analyse and understand the structure, processes, and feedback loops that make up the organization. This correct and clear

understanding of the organization as a system is a necessity to be able to manage organizations effectively and efficiently and to achieve organization's goals.

3.4 Definition of Key Terms Used in Health Systems

Different kinds of terminologies are frequently used to describe processes involved in health systems. Some of these terminologies are listed below;

(i) ***Inputs*****:** include raw material, energy and resources processed to produce the outputs of the organization. Examples include information, money, health workers effort, physician's time, fuel, energy, time, individual effort, & any raw material of some kind.

(ii) ***Elements or components*** are the things, parts, or substances that make up the system. These parts may be humans, material, equipment, etc. Elements have attributes or characteristics that can be measured or described such as size, colour, volume, quantity, temperature, and mass.

Throughput is the processes used by the system to convert raw materials or energy (inputs) from the environment into products or services that are usable by either the system itself or the environment. Examples include, thinking, diagnosing, planning, decision-making, writing prescription, taking vital signs, operating on a patient, constructing, sorting, making a speech, sharing information, meeting in groups, discussing, etc.

(iii) ***Output*** is the product or service which results from the system's throughput or processing of technical, social, financial & human input. Examples include health services, better health, software programs, documents, decisions, laws, rules, money, assistance, cars, clothing, bills, etc.

(iv). ***Feedback*** is information about some aspect of data or energy processing that can be used to evaluate & monitor the system & to guide it to more effective performance.

3.5 Types of Health Systems

There are different types of systems. Systems may be open or closed, simple or complex.

A **complex** system is one that includes many other micro-systems, or a network of systems, thus forming a much larger and complex system.

Subsystem is a system which is a part of a larger system. They can work parallel to each other or in a series with each other. Information system is an example of a subsystem in a hospital. Medical staff as an organization is a subsystem of the hospital.

Dynamic system is any system that continuously influences and changes its environment and is being influenced and changed by its environment. Dynamic systems are usually composed of components that are structured and interrelated in such a way that a change in one component necessarily affects other components of the system. A hospital is an example of a dynamic system where it influences and changes its environment (health, quality of life) and is being influenced by its environment (restructuring to provide new needed services). On the other hand, a static system is defined as any system that does not change over time in relation to environment. To survive, systems are better off being dynamic rather than static. Evidence based practice in health care is an example of how health care services are dynamic and not static.

Open system is defined as a system that interact with its environment exchanging raw materials and energy for services and/or goods produced by the system. Health care facilities, hospitals, families, humans, cardiovascular system, banks, etc are examples of open systems. A hospital produces health services through practice, health care professionals through training and knowledge through research. In return it receives money, raw materials, appreciation, and energy from its environment.

Any system must have a goal. The goal is the overall purpose for existence of the system. Examples include; treating patients, to educate environmental health Assistants, to produce knowledge, and so on.

3.6 System Characteristics

Most systems have the following common characteristics:

• All systems have common elements. These are input, throughput or process, output, feedback, control, environment, and goal.

• Systems have varying degrees of complexity.

• The organized components of a system comprise a unified whole that is greater than the sum of its components.

• To be viable and successful, a system must be goal-directed, able to adapt to changing environment, technology and circumstances, and be governed by feedback and must value continuous leaning and development, creativity and innovation. And to survive, a system must save some of its output to maintain itself.

• The structure of systems is defined by its components (parts) and processes.

• Various system components have functional and structural relationships between each other and are organized in a way to accomplish a specific function or set of functions.

• Systems often exchange material, information and/or energy beyond its boundary with other systems, through input and output processes.

• To be part of the system any element must have a relationship with at least one element of the system. Any element which has no relationship with any other element of the system cannot be a part of that system.

3.7 Health Organization as a System

Human social groups (organizations) exist and interact to produce, consume and exchange goods and services. It is helpful for understanding to think of organizations as systems. A system is an organized collection of independent but interrelated elements or components to accomplish an overall goal. Simply put, an organization as a system has various inputs that are processed to produce outputs. A continuous feedback between the different components of the system ensures that the system is accomplishing the goals of the organization (system). A system can be the entire organization, or any of its departments, groups, or processes.

Organizations (systems) have inputs, processes and outputs. Inputs include resources such as human resources, equipment, computers, raw materials, money, technologies and information. Inputs are processed to produce the outputs of the organization. Outputs are the results of the processes of the organization. Outputs can be goods or services. Examples of goods are food, clothes, equipment and cars. Organizations produce services such as transportation services, education, and health care. Health care industry produces services such as providing health care, protecting against communicable diseases, and providing food services in hospitals. Feedback comes from multiple sources; from the managers, workers who perform processes, customers who use system services, newspapers and political leaders.

Organizations are composed of numerous subsystems, as well. Complexity of an organization is determined in part by the number of subsystems it has. Each subsystem has its own boundaries, inputs, processes and outputs with an overall goal for the subsystem. Common examples of subsystems are departments, units, projects, teams, or processes.

Organizations are defined by their mission, strategic plan, goals, policies and procedures, organizational charts, job descriptions and legal documents. Feedback within the organizational systems is maintained or controlled by its legal documents, policies and

procedures, budgets and quality management programs. These managerial documents provide the standards and benchmarks for evaluating and improving organization's and individual's performance.

3.8 Hospital as a System

It is important that an environmental health worker knows how hospital system works. You may be employed to handle environmental health aspect of a hospital health care system. Let us now learn how hospitals system works.

Systems theory concepts and principles can been applied to understand and explain hospitals and their operation. A hospital is defined as "any medical facility with an organized medical and professional staff and beds available for continuous hospitalization of patients formally admitted to it for medical observation, care, diagnosis, or surgical and non-surgical treatment" (Pan American Health Organization, 2004). Another definition is that a hospital is "an institution which provides beds, meals, and constant nursing care for its patients while they undergo medical therapy at the hands of professional physicians. In carrying out these services, the hospital is striving to restore its patients to health".

Hospitals are open systems that interact with the environment to complete necessary trades for survival of the system, growth, and fulfilment of systems' goal. A hospital is a subsystem that exists within a hierarchy of other systems. Additionally, Hospitals are complex systems, since they contain large number of subsystems such as the radiology department, nursing services, housekeeping, food services, laundry, laboratory department and so. Each of these subsystems can be looked at as a system of its own.

Hospital systems consist of a pattern of organized relations where different components of the system are related to each other in a particular way. Organizational structures and charts constitute a graphical representation of these relationships. Hospital bylaws, rules, policies

and procedures regulate these relationships. Hospitals are subsystems of overall health care system of a nation.

4.0 Conclusion

A system is an organized collection of independent but interrelated elements or components to accomplish an overall goal. A system can be simple or complex depending on composition of a health institution. A system is established to ease information sharing and coordination.

5.0 Summary

Health system is a system with various levels of complexities. It involves decision makers, policy makers, and groups of people in institutions, organizations, and agencies that shape the way in which health care is delivered to society. The Health system also encompasses different levels of care, from providing services for the prevention of diseases, to providing palliative/end-of-life care. All systems have common elements. These are input, throughput or process, output, feedback, control, environment, and goal.

6.0 Tutor Marked Assignment

1. Define the term 'System'

2. Discuss on 'Health organization as a system'

3. What are System Characteristics?

7.0 Reference/Further Reading

1. Miller, T.S. (1997). *The Birth of the Hospital in the Byzantine Empire.* Baltimore, MD: Johns Hopkins University Press.

2. von Bertalanffy, Ludwig. (1962). General System Theory - A Critical Review. ***General Systems*** VII: 1-20.

UNIT 2 ROLE OF MODERN TECHNOLOGY IN PUBLIC HEALTH

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Health Information System

3.2 Health Information Needs and Levels of Information Generation

3.3 Aims of Health Information Technology

3.4 Common HIT Application and Their Role in Achieving Quality Healthcare

4.0 Summary

5.0 Conclusion

1.0 Introduction

Public Health as a domain is a massive complex mixture of professionals and organizations that work together to achieve the mission of ensuring the nation's health. The mission can only be achieved when the population based information is made available at the fingertips of healthcare professionals, administrators, managers, governmental, non-governmental agencies and other contributing to improve the health of the community.

Population based information includes a wide range of community and health facility based information such as socio-demographic, health status, resources, infrastructure, financing, healthcare utilization, coverage and many more. Collecting, transmitting, processing, analysing and presenting these information is always challenging for the healthcare managers and administrators.

2.0 Objectives

The aim of this unit is to enable you;

i. Explain what is meant by health information system

ii. Understand different forms of health information system

ii. Appreciate the role of modern technology in health sciences

3.0 Main Content

3.1 Health Information System

Public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals. The focus is to prevent rather than treat a disease through surveillance of cases and the promotion of healthy behaviours. This could only be achieved when the information related to the health of the community reaches to the healthcare professionals, planner, policy makers and managers at right time where and when required. Over the last few decades, the implementation of Health Information Technology (HIT) has become increasingly common in healthcare settings.

Health information technology (HIT) provides the umbrella framework to describe the comprehensive management of health information and its secure exchange between consumers, providers, government and quality entities, and insurers. Its role in public health is unmatchable because it plays a vital role in early detection of infectious disease outbreaks around the country, improved tracking of chronic disease management, monitoring healthcare programs and coverage, evaluation of health care utilization, and in making transparent and evidence-based decisions for health system interventions.

In addition, HIT also reduces the paper work by eliminating the needs of paper based record and improve the administrative efficiency. It improves the healthcare by decreasing medical errors with an assurance that all the healthcare providers have accurate and timely information. Health information technology in general is increasingly viewed as the most promising tool for improving the overall quality, safety and efficiency of the health delivery system.

Health Information Technology has the potential to make a major contribution in improving access and quality of healthcare services while containing costs. HIT contribution in public health is countless in terms of providing elective, emergency, and long-term clinical care; educating community; improving nutrition and hygiene; and providing more sanitary living conditions. These in turn ultimately involve massive social and economic changes, as many health challenges go well beyond the health sector.

3.2 Health Information Needs and Levels of Information Generation

A key element to implement Health Information Technology (HIT) is to understand what to collect, where to collect, whom to report and how these information will be used and by whom because these are used to provide curative, preventive, rehabilitative and palliative care to the population. Considering this, it is required to determine the information needs, tools for data collection and levels of data generation. Once these are defined and determined, it is easy for the managers and providers to proceed with the implementation process in a better way.

Figure 5 (Below) depicts that data collection starts for the house hold visit to the patient, facility, districts, national and global level where the amount of data generated are more at the lower level as compare to higher.

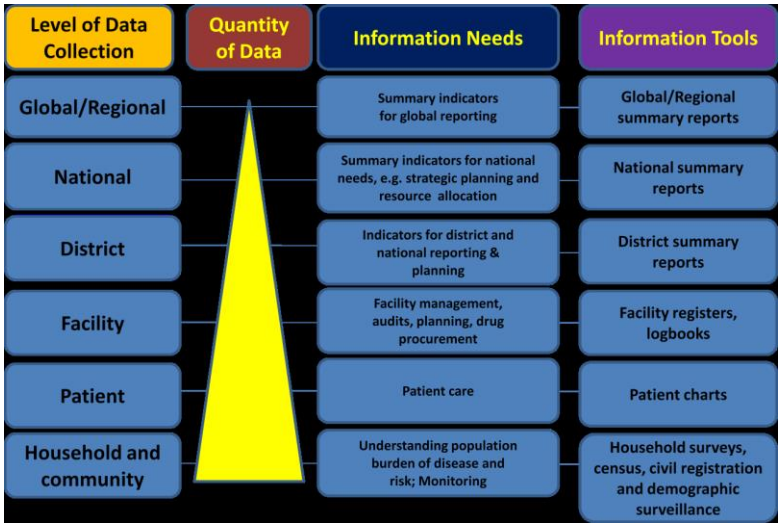

Fig 5. Information collection from household to Global level

To make an evidence based decision healthcare providers, managers and policy maker need to understand the population health status, burden of disease, type of healthcare services required to each level, and the progress of the activities/programs at each level of healthcare system. Unless this complete, accurate and adequate health information reaches to the users in a timely fashion, the goal of achieving **"health for all"** will be impossible.

3.3 Aims of Health Information Technology

The ultimate aim of health information technology in healthcare is to provide optimal information support to the healthcare professionals, managers and policy makers for quality decision making, care and treatment. The HIT provide highly-secure, economical, easy-to-use, always available, point-of-care application.

- Improving program efficiency by collecting, processing and analysing a large amount of data quickly. As the manual systems are by nature paper-heavy, managers are often buried under the mountain of data result in which they are unable to navigate the information for quality decision making.

- Producing a wide variety of output and feedback reports targeted for many level of the health system from a single data set or by combining data sets.
- Reducing the duplication of work where the data can be entered once and will be available to at any point of to the care providers, mangers and policymakers.
- Automatic validation helps the care providers to improving the quality of data collection through automatic validation during data entry and automatic preparation of immediate feedback reports on error for individual health facilities.
- Improving analysis and information presentation to facilities data interpretation and use for decision making.
- Decentralization data analysis and use to reduce the data entry bottleneck at the central level and provide management information to district manager in a timely manner.
- Training health personnel through computer based interactive tutorial for self-instruction and continuing education.
- Managing the data for monitoring the attainment of health program targets and objectives.
- Collaborating the networks of providers and researchers in analysing, discussing and interpreting the care process and outcomes for its continuous improvement.
- Integrating service statistics data with already computerized data on demography, health infrastructure, and/or financial management.
- Accessing the internet to search for information about new products and approaches to service delivery, and exchanging information with other health care workers around the globe.

- Improving data dissemination by providing online public access to data through internet World Wide Web pages.
- Developing decision support tools for planning increased service coverage and logistics (e.g. target cost from future group)

3.4 Common HIT Application and Their Role in Achieving Quality Healthcare

There are many applications that exist in relation to the management of health information as well as in provision of healthcare services. The most common are:

Health Management Information System

Health Management Information System is an information system specially designed to assist in the management and planning of health programs, as opposed to delivery of care. Health Management Information System incorporate all the data needed by the policy makers, clinicians and health service users to improve and protect population health.

As per World Health Organization (WHO) investment in health management information systems (HMIS) now could reap multiple benefits, including:

- helping decision makers to detect and control emerging and endemic health problems, monitor progress towards health goals, and promote equity;
- empowering individuals and communities with timely and understandable health-related information, and drive improvements in quality of services;
- strengthening the evidence base for effective health policies, permitting evaluation of scale-up efforts, and enabling innovation through research;
- Improving governance, mobilizing new resources, and ensuring accountability in the way they are used.

Electronic Health Records

The Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any health care delivery setting. It supports healthcare providers with optimal information in continue, efficient, and quality integrated healthcare. It contains the problem list that clearly delineates the patient clinical problems and current status of each problem. It addresses patient data confidentiality extensively and can be linked to local and remote knowledge, literature, bibliographic or administrative database. It is flexible and expandable to support not only today's basic information needs but also the evolving needs of each clinical specialty and sub-specialty.

Decision Support System

A Decision Support System (DSS) is an interactive, flexible and adoptable computer based information system developed for supporting decision making related to the solution of particular management functions. It assists the clinicians in finding health information of the patient required to diagnose the patient condition and provide the continuity of care. Though a wide variety of patient's information stored in the computer, it helps healthcare providers to get the patient data without any extra effort. As patient care involved professionals like physicians, nurses, pharmacists, and other supportive staff and each one wants patient's information at their fingertip as and when required. Decision Support System provides easy flow of information among these professionals to provide best care. Being a paperless system, the DSS provides legibility of data, which helps the health care professionals to avoid the complexity in finding various results

Hospital Information System

Hospital Information System (HIS) is as open system, which attempt to integrate and communicate the outside and inside flow of information within a hospital and provide the

functions common for all application. It support the healthcare providers in real time access of patients information, preparation of operation document, keeping track of movement history of the patient across locations, Multiple accesses to information, Reduction in transcription work, compilation of data in multiple forms etc. A well designed, integrated hospital information system, tailored to the specific needs of a particular hospital, can improve the productivity of a hospital staff, allow each department and service center to control its own information processing and contribute to the quality of patient care.

Computerized Physician Order Entry

Computerized physician order entry (CPOE), is a process of electronic entry of medical practitioner instructions for the treatment of patients under his or her care. These orders are communicated over a computer network to the medical staff or to the departments (pharmacy, laboratory or radiology) responsible for fulfilling the order. CPOE decreases delay in order completion, reduces errors related to handwriting or transcription, allows order entry at point-of-care or off-site, provides error-checking for duplicate or incorrect doses or tests, and simplifies inventory and posting of charges. Order Entry is in the domain of the pharmacist because it is the pharmacist responsibility to verify any entry into the system concerning the use of medications within the hospital or health care system. Order clarification requests will be enhanced by improved communication of collaboration amongst the health care team.

District Health Information System

A District Health Information System (DHIS) is a high flexible open source health management information system and data warehouse. The work of it is to cover aggregate routine data, case base patient information, disease surveillance, survey or audit data etc. The system is used to transmit the valuable information from lower level to the higher for reporting and planning of healthcare services.

4.0 Conclusion

Records of all your activities including community needs assessments, Health planning, M&E can be kept and shared by the use of modern technologies. You can now collect useful information just by logging in to the internet. Although the technologies are easy to use but often very expensive for health workers at the primary level.

5.0 Summary

Over the last few decades, the implementation of Health Information Technology (HIT) has become increasingly common in healthcare settings. A key element to implement Health Information Technology (HIT) is to understand what to collect, where to collect, whom to report and how these information will be used and by whom because these are used to provide curative, preventive, rehabilitative and palliative care to the population. There are many applications exist in relation to the management of health information as well as in provision of healthcare services; Health Management Information System, Electronics Health Records, District health Information System etc.

6.0 Tutor Marked Assignment

1. Discuss on any Health Information system currently employed in your location

2. Modern technologies make decision-making easier. Discuss

3. List five advantages of using modern technologies in environmental health

7.0 Reference/Further Reading

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UNIT 3 DIGITAL TECHNOLOGY, GAMES AND SIMULATIONS FOR PUBLIC HEALTH

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Digital Technology and public health

3.2 Social Media as a Tool for Information Gathering and Sharing

3.3 Barriers and Challenges in the use of technologies in public health

3.4 Simulations and Games for Public Health

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 Reference/Further Reading

1.0 Introduction

The digital age has revolutionized the way people and organizations access information, communicate, and collaborate. Social media - Internet-based tools for developing and sharing content - allow for quick and easy dissemination of information to diverse stakeholders. With billions of people using social media platforms across the globe, public health has the potential to increase the depth and breadth of conversations, engage and build relations in new ways, and have greater impact.

2.0 Objectives

The aim of the unit is to:

-Enable you understand what is meant by digital technology

-Develop your own social media account to create awareness on environmental health issue

-Enable you describe how simulations and games are used in public health

3.1 Digital Technology and public health

During the past two decades, the world has seen profound changes in technology development, heralding an information age. As a result of the information and communication boom, a combination of new technologies is being used to obtain, disseminate and share information as never before. Moreover, social media has also become a powerful tool to share ideas and solutions in almost all spheres of daily life. This also offers great opportunities to bring about better health to populations at large in a different way. An important question however is: how can modern technology be deployed to improve quality of health delivery at a lower cost? What are the challenges and opportunities that lie ahead?

It is due to today's internet connectivity and (smart) mobile phone penetration, more than air travel, that the world is now literally a global village. With information and communication devices available even in remote villages, there is a potential that these technologies could revolutionize health service delivery and act as a "game changer" for an efficient and people-centred healthcare system in the 21st century. For example, an early warning system during emergencies via short text messaging, or even availability of mobile phones in remote villages can be used to call for help in the event of a difficult labour thereby preventing maternal or infant mortality. Mobile phones which are now virtually ubiquitous with 700 million users in India alone are being used to track distribution of bed nets by malaria programmes. In the global adult tobacco surveys, handheld devices or PDAs are used by health care workers to collect and collate survey data, and to transfer data to a central location

in no time; such a facility can be used in other similar field surveys without use of the printed forms. Satellite connectivity helps greatly in distance learning, and in transmission of data as well as information pertaining to early warning of unusual health events.

3.2 Social Media as a Tool for Information Gathering and Sharing

Health organizations use social media as an effective way to expand their reach, foster engagement, and increase access to credible, science-based health messages. This creates the opportunity for ongoing dialogue, knowledge exchange, and the integration of social media into public health activities. Public health is using social media to mobilize knowledge and enhance the use of research evidence; inform, educate, and empower people about health issues; assess public perception; increase rapid access to public health messaging during emergency and non-emergency situations; mobilize community partnerships and action; and collect surveillance data. Social media allows messages to be audience specific and distributed more widely, and promotes the democratization of knowledge and information.

In terms of research and knowledge mobilization, social media can facilitate rapid distribution of research, and stimulate conversations on how the findings can be used to advance practice and policy. Public health organizations that use Twitter for research dissemination have noted an increase in interaction, followers, and website traffic. While social media use is being encouraged, some researchers express reluctance to use social media due to lack of control, difficulty in assessing benefits, and distrust due to lack of formal peer review. Researchers have described social media as being incompatible with research, of high risk professionally, of uncertain efficacy, and an unfamiliar technology.

Many public health organizations have established a social media presence, predominantly on Twitter, Facebook, and YouTube. For example, as of July2011, 33 of 36 public health units in Ontario were using social media for health promotion campaigns, tweeting about local

events, developing You Tube channels, and blogging about current issues (e.g., alcohol consumption, parenting). Similarly, in the United States, a study found that most state public health departments (SHDs) have recently begun to use at least one social media application.

Social media are being integrated into a range of public health interventions and have the capability to facilitate meaningful engagement and support community building and advocacy with target audiences. Many public health organizations have, however, a limited reach, as evidenced by the low number of followers, page likes, and subscribers. They are also using social media in a unidirectional manner instead of realizing social media's full interactive potential.

3.3 Barriers and Challenges in the use of technologies in public health

There are many barriers and challenges to the rapid use of modern technology and in the implementation of various initiatives and specific World Health Assembly resolutions.

In many countries, the infrastructure or connectivity does not exist. There are also concerns that investing in the use of modern technology comes at a high initial cost compared to basic health needs and other competing priorities. Demonstrating the cost-effectiveness of modern technology in promoting health is therefore a priority. Creative ways of investing and cost sharing should be discussed so that the information highway has health as one of its main applications. Building capacity of health care workers through training is also urgently needed. There are also issues that have legal, security, accountability and ethical implications. For example, those related to the uniformity in legal standards, especially those that are in place in developing countries regarding the security and safety of medical information. There are concerns also that the rapid developments and penetration of technology is further causing a digital divide between "haves" and "have nots", causing further disparities in society and along the social gradient.

Nevertheless, technology must be used appropriately. Whether technology can be of benefit or harm will depend largely on the way it is used. The potential applications of information/communication technology for health to strengthen health systems and improve efficiency, safety and quality of healthcare are truly enormous. As recognized by the World Health Assembly, all countries must use the opportunities to build or strengthen basic eHealth systems as a part of health programmes thereby improving health services. While governments have a key role in pushing the agenda, it will be important to strengthen collaboration with international and nongovernmental organizations, the private sector and other key stakeholders. Member States can also learn from success and failures of other countries and partners in order to move forward in this area. Based on evidence, it is clear that enhancing use of modern technology is an excellent investment for the future.

3.4Simulations and Games for Public Health

Historically, educational games have been used as an educational tool for centuries. Simulation, however, is a new technique in comparison to games, but its use and acceptance as a teaching tool has been rapidly growing. To date, many studies report their use as effective teaching tool in areas such as healthcare, business, military applications, and aviation training.

Traditional teaching approaches (i.e., lectures, seminars) have been shown to be effective and economical. However, they do not promote active learning environments that support critical thinking and problem solving skills; are not interactive, and often lack motivation and engagement due to their passive nature, which are essential elements of learning. Although lectures are widely used as a method for teaching in the health sciences, they are often dull, deliver large amounts of information in short time periods, and promote passive processes of thinking, rather than active or contextually relevant learning. Conversely, educational games

are innovative teaching tools that have been shown to promote critical thinking, enhance clinical confidence building and promote problem solving skills.

Educational games are defined as a set of competitive activities which consist of strict rules to reach desired goals such as acquiring or improving knowledge and skills. They differ from non-educational games where the purpose is primarily entertainment. *Simulations***,** like educational games, consist of a different medium of instruction where the act of imitating a situation, event, and/or environment closely mirrors the real world. Simulations may be presented by using a computer software and/or program to imitate a clinical scenario, a low to high-fidelity mannequin to imitate a real scenario, or in a graphics/animation format to mimic a clinic or laboratory. Here, the user interacts with the game to solve a real-life situation or a problem in a simulated environment. This type of environment can be provided through serious gaming. A **serious game** is defined as a computer-aided application/software that is designed to engage, interact, and challenge user in a safe and fun way to learn the skills, knowledge or attitudes that can later be applied in reality.

Some games and simulators are technically inclined (e.g., computer-based games, electronic games, video games), others may be complex in nature (e.g., serious games), while some may involve group interactions (e.g. multiplayer, group/team quiz competition). Regardless of their content, their purpose in education remains the same: To improve, foster, and motivate the students' knowledge base, clinical skills, attitudes and desired behaviours as health care professionals in training.

Table 4: Strengths and limitations of Educational Games

Strength	**Limitations**
Rules provide structure for learning and context □ Promotes active learning through interaction □ Creates conducive learning environment □ Competitive nature increases interest and motivation to do well □ Enhances short-term and long-term knowledge retention □ Evaluates and assesses learning processes on ongoing basis □ Promotes teamwork and group critical thinking and problem solving skills □ Facilitates social and emotional through group interaction □ Displays new information creativity □ Motivational □ Challenging and fun □ Provides immediate feedback mechanisms	Game-based learning style may not be suitable for all students and learning styles □ Require some technical competency to play/operate the game hardware/equipment □ Creates stress when incorrect answers are given □ Competition can be viewed as a threat □ Persistent high cognitive demand may be a challenge □ Time consuming activity/may take time to setup, arrange and/or load □ Previous game experience may be required for successful interaction experience □ Support of technology and infrastructure may be required □ Age-restrictions to meet different growth and development levels and needs □ Game may be costly to purchase (e.g., software, hardware, information technology services)

4.0 Summary

Modern technology played a major role in enhancing health care delivery. As discussed in this unit, it can be used to coordinate activities and make data collections easier. Emergence of Social media in recent years has helped the public health workers to obtained useful

information required for decision-making. In addition, simulations and games are now been used to facilitate teaching of Health Science courses.

5.0 Conclusion

Information technology, social media and simulations have been identified as important components of health care delivery. Data on health challenges faced by most communities are within your fingertips. Application of games and simulations in health sciences make it easier for students to understand different concepts which may be difficult to explain using conventional methods.

6.0 Tutor Marked Assignments

1. Explain how you can collect data on lack of household toilet facilities using your facebook account

2. What are the advantages and disadvantages of educational games?

3. Create an account on any social media account to create an awareness on environmental pollution

7.0 Reference/Further Reading

1. Abdulmajed, H., Park, Y. S., and Tekian, A. (2015). Assessment of educational games for health professions: A systematic review of trends and outcomes. *Medical Teacher*, *37*(S1), S27-S32.

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