

PROJECT GUIDE

Certificate in Health Care Waste Management (BHMP-101)



Indira Gandhi National Open University
School of Health Sciences

in collaboration with



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March, 2019

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ISBN-81-266-

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Further information about the School of Health Sciences and the Indira Gandhi National Open University courses may be obtained from the University's office at Maidan Garhi, New Delhi-110 068.

Printed and published on behalf of the Indira Gandhi National Open University, New Delhi by **Director, School of Health Sciences.**

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Laser Typeset by: Tessa Media & Computers, C-206, Shaheen Bagh, Jamia Nagar, New Delhi-110025

Printed at:

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1.0 OBJECTIVES

After reading this Project Guide you should be able to:

- decide upon a suitable, relevant topic and methodology for your project;
- plan the project;
- undertake the project work;
- analyze and record observations;
- reach conclusions and make recommendations; and
- submit the project report.

1.1 INTRODUCTION

The project is a preliminary form of research. It is compulsory for you to undertake one of the projects for successful completion of this programme. Planning for the project should start as soon as you receive the self-instructional materials for this programme. In case, you face difficulty, you may contact your counsellors.

Through this programme of Certificate in Health Care Waste Management, an attempt has been made to make you aware and bring in you some positive attitudinal changes towards proper management of health care waste. The course also envisages to develop certain skills in you so as to enable you to discover the fallacies, analyze the common problems and to find possible practical solutions to some of them. The project work gives an opportunity to explore and innovate. It will help you to collect first hand information and expose you to the problems existing in the area of health care waste management.

The project work has been allotted a time duration of 60 hours. This includes planning, conduction of the project and report writing. Kindly keep this time constraint in mind while choosing the topic for your project. The theme of the project should be relevant to the present programme and the work involved in the project should be within your capacity and reach. The project may also be an initiative for you to work further on the different areas of health care waste management extending outside the scope of this programme, which you may like to continue after the completion of the programme.

Having carefully read the above you can now proceed with your project guide and undertake a project, which you would enjoy doing and in the process discover new facts.

1.2 GENERAL GUIDELINES

The following steps need to be followed for planning, conducting and writing report for your project:

- 1) Deciding tentatively the project topic and the methodology you wish to undertake.
- 2) Conduction of the actual project work with interactions with the counsellors if required.
- 3) Preparation of the project report and its submission to the coordinator .

As already discussed the project work is of two credits i.e. 60 study hours. Thus, you need to manage and divide your time for planning, conduction of project and report writing. Time in each category will vary from project to project depending upon the nature of the project.

1.3 DECIDING UPON THE PROJECT TOPICS AND METHODOLOGIES

The foremost thing to be decided is the topic of the project you would like to undertake.

1.3.1 Topics of the Project

Select a topic, which you are familiar with and which is of your liking.

Given below are a list of suggested topics from which you may finalize your project topics. You may also select your own topic. Some points to be highlighted while undertaking the projects from the suggestive list of topics are provided in Appendix 1.

1.3.2 Suggested Topics for Project Work

- 1) Health care facility surveys to study health care waste management practices.
- 2) Study of Hospital Acquired Infections (HAI) in a health care facility.
- 3) Study health care waste management practices in laboratories. .
- 4) Study health hazards associated with health care waste in a hospital and in the community.
- 5) Survey of incinerators.
- 6) Study health hazards on waste pickers handling health care waste.
- 7) KAP (knowledge, attitude and practice) study of nursing staff in Operation Theatre, Acute surgical wards and ICUs on health care waste management.
- 8) Conduct a study on 3Rs principles (Reduce, Reuse and Recycling practices in a hospital) .
- 9) Conduct a study on radioactive waste generation and health hazards.
- 10) Conduct a survey .f needle stick injuries in different health care providers.
- 11) Mercury in health care facilities.
- 12) Patient safety and health care waste management.
- 13) Study rural immunization programmes in your district and methods of health care waste management.
- 14) Study legislation and regulatory mechanism for health care waste in your country.
- 15) Study of different waste treatment systems.
- 16) Study the health hazards of hospital waste to waste handlers.
- 17) Impact of different training and awareness programmes on health care waste management.
- 18) Study of centralized facilities in your region.

Once the Topic has been decided, the methodology needs to be decided.

1.3.3 Methodology of the Project

The following are the methodologies out of which you may choose the one most appropriate for your project:

- 1) Case studies
- 2) Knowledge, attitude and practice studies
- 3) Assessment/Evaluation studies
- 4) Comparative studies

Let us learn a little about the type of methodologies .

Case Study

A case study is an in-depth study of particular events, circumstances, and situations. For certain types of studies the case study is favoured over other methodologies, since it can provide information which may not be available in broader surveys.

An example of an area where such an approach could be useful is waste disposal/management of a particular hospital. Another could be management and recycling of segregated waste collected within the community.

In a case study approach, one is required to go in depth about the procedures adopted by the particular organization for the situation or process in question. You may need to observe, talk or interview the personnel or official concerned. You must also then compare the procedures with those available in literature to help you in your discussion about the case. Actually a case study may also include one or more of the other methodologies listed.

The time required for the project is fixed. Hence the methodology should be decided accordingly. If the area taken up is large and the methodologies involved are complex and cumbersome it may be better to just consider and explore one component.

Knowledge, Attitude and Practice (KAP) Studies

These studies involve finding out the knowledge, attitude as well as the practices followed by a group of people. These studies are usually undertaken in a community or a specific group of people like industrial workers, health professionals (doctors, nurses waste handlers), college teachers etc. This study serves as a subset of the group and helps us to make an impression about the knowledge, attitude and practices adopted by the community/ group.

KAP studies could be adopted for topics like, segregation of waste, reporting needle stick injuries, hazardous waste management, recycling or reuse of waste material, evaluation of training and capacity building programmes.

For undertaking a KAP study, a minimum sample size of 20 individuals is required. Semi structural questionnaire or interview method is adopted for collecting the information. There should be about 7-12 questions each from knowledge, attitude and practice areas. However, the number of questions and the sample size may vary depending upon the topic of your project.

Assessment/Evaluation Studies

In such a study, the procedures or methodologies adopted by various organizations, institutions or industries are taken up for critical examination.

An example of such a study could be assessment of the procedures involved in waste management in a health care setting. For conducting such a study, you need to observe carefully the steps followed by the institute. You may be required to interview a few people. After collecting the information, find out what is the standard methodology of such a procedure. You may also like to find out how effective has been the process adapted in the institution. After these observations, arrive at conclusion. You may like to give suggestions or recommendations.

Comparative Studies

Such studies are undertaken to study similar procedures/studies adopted by different institutions. For example, you could study the hospital waste management of two hospitals or waste disposal methods of two health care facilities. It would be required to bring out the differences in them critically and you must discuss the advantages and disadvantages of both the systems.

1.4 SELECTING PLACE FOR DOING PROJECT

Once you have decided tentatively on a topic, the methodology you would wish to adopt, decide upon the area or locality or institution where the project will be conducted. Before you plan your project in detail you must establish contact with the area/locality/institution where you will conduct a project to find out:

- the feasibility of the project
- the composition of the area and resources available
- the strategies and methodology which would be most appropriate while conducting the project

1.5 PLANNING AND CONDUCTING THE PROJECT

Prepare a detailed plan as to how you would conduct the project. Following is a list, which shall serve as a guideline for you while you are planning your project. Depending upon your project theme, you can make your own list, using the guidelines given below:

- 1) The time required for conducting and report writing needs to be decided.
- 2) Depending upon the availability of time, the size of the sample for the study needs to be finalized.
- 3) Methodology to be adopted for collection of data needs to be worked out in detail.
- 4) Additional resources in the form of tools, equipment and manpower should be realized and the feasibility of their availability needs to be assessed. Kindly keep the time frame in mind while deciding these.
- 5) Support from community, institution, individual personalities etc. may need to be arranged.

A similar guideline also needs to be prepared for conducting the project:

- 1) Contacting the community or institution to initiate or provide support during conduction of the support needs to be established and the frequency of interactions needs to be decided.
- 2) Collection of various resources required for the conduction must be done.
- 3) Using the methodology decided, data must be collected within the time frame available.
- 4) Recording of observations and analysis of the data if required needs to be undertaken.
- 5) Project report needs to be prepared.

1.6 WRITING THE PROJECT REPORT

After the project is completed a report must be prepared and submitted to the coordinator. The project report must be neatly typed, consisting 30 to 40 double space pages (excluding appendix and exhibits). A guideline for the format of the report is presented below. You may modify the same as per your requirement.

- Topic of the Project
- Objectives
- Introduction
- Review of literature related to the project
- Methodology
- Observations and discussions
- Conclusion and recommendations

Let us elaborate a bit on each topic:

- 1) **Topic of the Project:** This should be clearly mentioned on the top. It should be short, unambiguous and reflect the main idea behind the project.
- 2) **Objectives:** It is always good to write a couple of objectives to be clear as to what you expect to do in this project. This makes your purpose clear and helps you to move towards concrete conclusions.
- 3) **Introduction:** Introduction should include the importance of the subject and theme selected. It should reflect upon the relevance of the same to this particular programme and may highlight the reasons as to why you decide to undertake this project.
- 4) **Review of Literature:** It should be related to the subject. It should contain relevant information, which would be useful for making observation, conclusion and recommendations about your project.
- 5) **Methodology:** Provide a brief methodology adopted by you. You are required to enclose sample copy of any questionnaire or proforma used by you. Any statistical tests applied must also be mentioned.
- 6) **Observations and Discussions:** Present your observations neatly and in detail. They are an important part of your project. You may present the information in the form of tables, charts or graphs. Photographs to support your information may also be included. The observation should be followed by a brief discussion that critically reflects on your observations. In the discussions, the usefulness of the project to yourself the health care facility and to the environment must be elaborated. Shortfalls, if experienced during conduction of the study must be brought out and solutions provided thereof.
- 7) **Conclusions and Recommendations:** In the end, you are required to provide a conclusion, which must satisfy the objectives.

1.7 EVALUATION

The project report submitted by you will be evaluated by an examiner. The project would be assessed out of a total of 50 marks. A minimum of 40% marks has to be scored in the project for being qualified for the certificate. In case a student does not score the required marks the student will have to repeat the project.

List of Suggested Topics for Project Work

1) Health Care Facility Surveys to Study Health Care Waste Management Practices

- Study of current waste generation patterns, at different points of waste generation - collection, storage, transportation patterns in each area
- Quantity of different waste streams generated
- Sharps waste management
- Final disposal options
- Workers safety
- Training and capacity building
- Recommended measures for improvement of the current system.

2) Study of Hospital Acquired Infections (HAI) in a Health Care Facility

- Study the kinds of HAIs, reasons for these infections
- General cleanliness and waste disposal pattern in the health care establishment
- Infection control measures taken in areas like ICU, ICCU, OT and labs
- Universal precautions adapted by the health care establishment
- Measures taken for patient safety
- Recommendations to reduce HAI - take proper universal precaution, proper housekeeping measures, orientation and training classes for the staff etc.

3) Study Health Care Waste Management Practices in Laboratories

- Study different kinds of labs, the activities undertaken by them
- Kinds of waste generated by the labs-; Solid or Liquid
- Present methods of waste handling and disposal
- Disinfection procedures
- Handling procedure for special waste streams like sharps, chemicals etc.
- Sharps management
- Precautions while handling sharps
- General precautions - Occupation and safety measures
- Recommendations for proper management of lab waste.

4) Study Health Hazards Associated with Health Care Waste in a Hospital and in the Community

- Health hazards to the health care workers within the facility like needle stick injuries, hazards due to chemicals like glutaraldehyde, formaldehyde, latex allergies, mercury and heavy metal contamination

- Health hazards to the patients and their attendants
- Health and environmental hazard to the community due to waste disposal practices
 - Open burning
 - Incineration operation
 - Hazardous waste disposal
 - Liquid waste discharge in the near by water bodies
- Recommendations to minimize the health hazards.

5) Survey of Incinerators

- Functioning of an incinerator, kinds of incinerator, operational parameters, environmental pollution control devices
- Economics of operations
- Health and environmental hazard associated with operation of incinerator
- Alternative environment friendly technologies available
- Existing legislation on incineration

At district level study

- Number of incinerators installed in the district
- Kind and capacity of incinerators [total number of incinerators (single/double chamber), manufacturing details].
- Other operational parameters-Years of operation, kinds of waste treated in the incinerators, operated on electricity or oil, amount of oil consumed, hours of operation, location of the incinerator, worker safety, alternatives available
- Hazards due to incinerators
- Recommendations for minimizing hazards due to incineration, rationale for installing incinerators and steps to minimize use of incinerators

6) Study Health Hazards on Waste Pickers Handling Health Care Waste

- Study the incidence of needle stick injuries in waste pickers
- Occurrence of diseases like HBV, HeV
- Exposure to heavy metals
- Health impact on waste pickers due to health care waste handling
- If possible, for assessing the health impact of waste, laboratory test for screening of infectious diseases and load of heavy metals should be carried out.

Recommendations for

- Safety precautions, disinfection/mutilation of waste before final disposal, from the health care facilities, recognizing the waste pickers as an important part of hospital waste management in developing countries, regular health checkups.

7) KAP (Knowledge, Attitude and Practice) Study of Nursing Staff in OT, Acute Surgical Wards and ICUs on Health Care Waste Management

- Study shall focus on nursing staff in OT, surgical ward and ICU, their attitude towards waste management, knowledge of waste management and practices followed. Information can be gathered through a structured questionnaire.
- Based on the findings the recommendations/suggestions should be drawn which will further help in enhancing the skills of the nursing staff in waste handling.

8) Conduct a Study on the 3Rs Principle (Reduce, Reuse and Recycling Practices in a Hospital)

- The present practices of waste management in the institute, are any of 3Rs principles followed in the hospital.

Area specific observations like in: Kitchen: Use of reusable utensils, reduce the use of plastic and foils, reuse the crates and use of earthen pottery, Radiology: Silver recovery system, OT and ICU: Reusable gown, mask and shoes.

- Recommendations on the application of the 3Rs principles in the health care facility like:

Reuse of waste collection containers

Reduce the use of plastics

Reduce the use of injections (rational of using injection)

Reduce use of disposable in labs like for culture plates

Recycling of plastic (after segregation, disinfection and mutilation)

Recycling cartons, papers, office wastes, use of double side papers etc.

Use of glass injection (after proper fertility), gloves - disposable/reuse

- Water treatment and recycling plant

9) Conduct a Study on Radioactive Waste Generation and Health Hazards

For the study preferably a cancer super speciality hospital should be selected:

- Study the structure of the hospital: Chemotherapy unit and radiotherapy unit
- Kinds of radioactive substances used, and their half-life. Precautions taken by the patients/doctor etc.
- while providing radiotherapy installation, preventive clothing/batches etc.
- Where is the radioactive waste stored and means of disposal
- Laws (regulations) for radioactive waste disposal
- Any case study due to leakage, improper handling of radioactive waste
- Health hazards associated with radioactive waste -
- Recommendation for proper radioactive waste management

10) Conduct a Survey of Needle Stick Injuries in Different Health Care Providers

- Survey of doctors, nurses, ANMs, paramedics, waste handlers and technology operators for needle sticks.

Present system of handling, transportation and disposing injection units and other sharps at the point of generation, secondary collection and final treatment and disposal site.

- Circumstances leading to needle stick injuries.
- Immunizations if any to the health care providers
- Recommendations on universal precaution and immunization of health care workers

11) Mercury in Health Care Facility

- List different mercury based instruments used in the health care facility
- Mercury spills - reasons and frequency
- Method of disposal of mercury
- Any system for containment of spills/collection of mercury
- Hazards due to mercury in humans
- Recommendation for alternatives to mercury

12) Patient Safety and Health Care Waste Management

- Concept of patient safety
- Infection control and patient safety
- Importance of universal precautions specially hand washing
- Health care waste management and reduced Hospital Acquired Infection (HAI)
- Recommendations for patient safety and occupational safety.

13) Study Rural Immunization Programmes in Your District and Methods of Health Care Waste Management

- Kinds of waste generated by the health care settings
- Methods of handling waste
- Collection/Storage and transportation of the waste from the point of generation to the final disposal site in the district.
- Recommendation for waste management systems in rural settings.

14) Study Legislation and Regulatory Mechanism in your Country.

- Study the evolution of the legislation
- Describe the legislation
- Present applicability and enforcement of the legislation
- Enforcement agencies role
- Knowledge of the health care workers about the legislation
- Public reaction about the legislation.
- Recommendations.

15) Study of Different Waste Treatment Systems

- Study different waste treatment technologies in your facilities
- Kinds of waste treated by each technology
- Cost of establishment, operations and maintenance for each technology
- Environmental and health impacts of the waste treatment technologies
- Discuss emerging waste treatment technologies
- Recommendations.

16) Study the Health Hazards of Hospital Waste to Waste Handlers

- Study the occupational hazards of waste collection and treatment in different health care providers
- Exposure to mercury spills, glutaraldehyde, etc., their handling and disposal by health care workers
- Study of HAI in a hospital
- Measures for protection of waste handlers against health hazards due to health care waste.

17) Impact of Different Training and Awareness Programmes on Health Care Waste Management

- Select a group of health care providers (like doctors, nurses, waste handlers, etc.) for this study
- KAP study of nursing staff
- KAP study of doctors
- KAP of paramedical staff, waste handlers and technology operators
- Recommendations: Importance of education programmes on health care waste management inclusion into the curriculum of the health care functionaries.

18) Study of Centralized Facilities in your Region

- Study the centralized facility in your region
- Beds/Health care institutions covered by the facility
- Treatment equipment installed
- Other infrastructural setups
- Collection and transportation patterns
- Cost of waste treatment per bed or per kg of waste
- Any existing legislation pertaining to centralized facilities
- Feedback of the health care institutions about centralized facilities
- Recommendations.

Guidelines for Preparing and Submitting the Project Report

- 1) The Project Work should be submitted in A-4 size (29 x 20 cm), typed in double space, in a bound volume.
- 2) One typed copy of the Project Report is to be submitted to the Programme In-charge of Programme Study Centre.
- 3) Kindly mention on the top of the envelope “PROJECT REPORT HCWM”.
- 4) Student’s should keep a copy of the Project Report with them. The Project Report submitted will not be returned to the student.

CERTIFICATE OF ORIGINALITY

Programme

WHCWM

Enrolment No.

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Programme Study Centre Code

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Regional Centre Code

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Topic of the Project Work

Project Work submitted to the Indira Gandhi National Open University in partial fulfillment of the requirements for the award of the Certificate in Health Care Waste Management. I hereby declare that this is my original work and has not been submitted elsewhere. .

Signature of the Candidate:

Name of the Candidate

Address

Year
