A Report on Assessment of Health Care Waste Management In Different Health Facilities of Nepal

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Management Division under the Department of Health Services is the focal division for Health Care Waste Management at its functional level. As a part of its task it conducted an Assessment of Health Care Waste Management throughout the country. Altogether twelve districts of the five Development Regions were selected for the Assessment. Out of these twelve districts, Assessment of six districts was supported by Government and 6 districts by World Health Organization. This Assessment is the study of its type in the field of Health Care Waste Management all over the country. It is supposed to provide baseline on existing situation of the Health Care Waste Management in different settings of Health Facilities throughout the country. This study represents Himali, Hilly & Terai area as well as Government and Private Health Institutions including Private Hospital/ Nursing Homes, Polyclinics, Pathology and Medical Shops. This study will be helpful to Institutionalize Health Care Waste Management in both Government and Non Government organizations working in the field of Health.

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ACRONYMS

AHW	Auxiliary Health Worker
ANM	Auxiliary Nurse Midwife
DDC	District Development Committee
DHO	District Health Office(r)
DoHS	Department of Health Services
DPHO	District Public Health Office(r)
FCHV	Female Community Health Volunteer
FWDR	Far Western Development Region
FY	Fiscal Year
GON	Government of Nepal
GTZ	German Technical Co-operation
HA	Health Assistant
HCW	Health Care Waste
HCWM	Health Care Waste Management
HF	Health Facility
HI	Health Institutions
HP	Health Post
HPI	Health Post Incharge
INGO	International Non-Governmental Organization
KAP	Knowledge Attitude Practice
KAP	Knowledge Attitude Practice
LH FMC	Local Health Facility Management Committee
MCHW	Maternal and Child Health Worker
MD	Management Division
MEQ	Monitoring, Evaluation and Quality Control Section
MoHP	Ministry of Health and Population
MS	Medical Superintendent
NFHP	Nepal Family Health Programme
NGO	Non-Governmental Organisation
NHEICC	National Health Education, Information and Communication
Centre	
NHSP-IP	Nepal Health Sector Programme-Implementation Plan
NPC	National Planning Commission
PHA	Public Health Administrator
PHCC	Primary Health Care Centre
PHN	Public Health Nurse
PHNA	Public Health Nurse Administrator
PHO	Public Health Officer
SHP	Sub Health Post
SLTHP	Second Long Term Health Plan
Sr. H. Ed. O	Senior Health Education Officer
SSMP	Support Safe Motherhood Project
VDC	Village Development Committee
VHW	Village Health Worker
WHO	World Health Organisation


Nepal
Far-Western Region
Mid-Western Region
Western Region
Central Region
Eastern Region
N
Humla
Darchula
Bajhang
Mugu
Baitadi
Bajura
Dadel
Doti
Achham
Kalik
Jumla
Dolpa
Mustang
Kancha
Dailekh
Jajarkot
Kailali
Rukum
Manang
Surkhet
Myagdi
Bardiya
Salyan
Rolpa
Bagl
Kaski
Lamj
Gorkha
Rasuwa
Par
Banke
Pyut
Gulm
Syan
Tanahu
Dang
Arg
Palpa
Nuwa
Sinpal
Dolk
Dhad
K
B
Solukhum
Sankhuwa
Taplejung
Kapilv
Rupa
Nawalp
Chitwan
I.
Kavre
Rame
Makw
Okhal
Parsa
Khot
Bhoj
Tehr
Sindhuli
Panc
Bara
Raut
Sarl
Uday
Dhan
Mak
Dhan
Ilam
Siraha
Saptari
Suns
Mora
Jhapa
Survey Site

EXECUTIVE SUMMARY

Health Care Waste Management is an unavoidable part of Health Service Management. Unmanaged hazardous waste in the Health Facilities is a major public health problem, leading to a serious risk of transmission of communicable diseases in the community leading to high morbidity and mortality which further results in less productive manpower for development. It also increases the spending of resources in curative services.

Though attempts have been done from time to time to manage health care waste properly, it needs further effort to strengthen the system. There is also a need of development of sufficient expertise in the field of Health Care Waste Management.

According to NHSP-IP (2004-2009), Health Care Waste Management is one of the priority areas of Health Service Management. There was developed a plan of action in JAR meeting for the year 2005-2007 to strengthen HCWM which was further reviewed in 2007. This Plan includes development of Health Care Waste Management committee at different functional levels, and sensitization & awareness program, orientation and capacity building programs at health facility and community level.

Being the focal Division for HCWM at functional level, Management Division, under Department of Health Services; conducted an assessment of Health Care Waste Management in different Health Facilities of the country. The main aim of the assessment is to establish Health Care Waste Management as a part of Health Service Delivery System by developing practical guidelines for the country. It is also supposed to sensitize the Health Workers as well as Clients regarding Health Care Waste Management.

Questionnaires and checklist were developed and pre-tested before the start of assessment. About 162 Health Institutions of 12 districts of Himali (1), Hills (6) and Terai (5) of five Development Regions (FWDR- 2, MWDR-2, WDR-2, CDR -3 & EDR-3) were selected for the assessment of Health Care Waste Management. Among them 114 were Government owned Health Institutions viz Hospital-18, PHC-20, HP-35 & SHP-41 and 48 were Private institutions viz Private Hospital/ Nursing Homes-26, Poly clinics/Pathology-6 & Medical shop-16.

Purposive (Judgmental) sampling was done for the selection of Districts & then Public and Private Health Institutions at district level. Selection was

done after discussion with concerned resource persons, DHO/DPHOs and other stake holders. It was a cross-sectional descriptive study; though some focus group discussion was also conducted among Health Staff and among community people separately. Primary data were collected with the help of enumerators who were given a one day orientation, supported and supervised by Central, Regional & district resource persons.

The highest number of Health Facilities(18) were visited in Lalitpur and Sindupalchok, 17 in Rupandehi, 16 in Bhaktapur, 15 in Banke, 14 in Kailali, 12 in Bardia, Dadeldhura & Ilam, 10 in Jhapa & Solukhumbu and the lowest 8 Health Facilities in Palpa districts.

About 162 HWs were interviewed to assess the knowledge regarding Health Care Waste and its Hazards and it was found that about 75.9 percent (123) HWs were able to categorise Health Care Waste as General and Hazardous Waste. About 24.1 percent HWs did not know that both types of waste is produced in the Health Facilities; Out of 18 HWs of Government owned Hospitals maximum (88.9 percent) have knowledge of both categories of Waste followed by 88.5 percent of the Health Workers in Pvt. Nursing Homes/Hospitals including Teaching Hospitals, and 82.9 percent of the HWs in Health Posts and Only 62.5 percent of the HWs from Medical Shops posses knowledge of this.

Out of 162 Health Workers interviewed, 116 (71.6 percent) were found with adequate knowledge about hazards of Health Care Waste. About 46 (28.4 percent) HWs were found with inadequate knowledge regarding this. About 88.9 percent (16) out of 18 Health Workers of Government owned Hospitals possess adequate knowledge regarding this, followed by 80.8 percent of the HWs from Private Hospitals/ Nursing Home and 80 percent of the HWs from PHC. Least, only 50 percent of the HWs from Medical Shops possess adequate knowledge regarding this, followed by 58.5 percent in Sub Health Posts, Policlinics/ Pathology (66.7 percent) and 77.1 percent HWs in Health Post *(table 3)*. There seems a need of training package to the HWs preferably for those working at Sub Health Posts and some orientation to Medical Shops & Polyclinics/Pathology.

Health Workers from 162 Health Facilities were asked about the segregation of HCW at source. It was found that 87 percent (141) of them possess the knowledge of segregation of HCW at source and 21 (13 percent) of them were not aware of the segregation of HCW at source. Out of 18 HWs of Government owned Hospitals, 94.4 percent (17) possess knowledge of

segregation of Health Care Waste at source followed by that of 92.3 percent in Private Hospitals/Nursing homes including Teaching Hospitals. This may be due to their exposure to Infection Prevention training conducted in most of the Hospitals.

The same number (162) of Health Workers were further asked about the different steps of Health Care Waste Management and it was found that only 14 HWs (8.6 percent) know about the different steps of HCWM. Maximum 156 (96.3 percent) HWs said disposal is a step of HCWM. Only 88 (54.3 percent) recognize segregation as a step of HCWM *(table 5)*. Out of 162 Health workers 32 (19.8 percent) possess adequate knowledge (More than 4 steps) about total process of Health Care Waste Management and 68(42 percent) of them possess inadequate knowledge about the total process of Health Care Waste Management *(table 6)*.

Out of 159 Health Workers discussed, 139 (87.4 percent) were found aware of one or more universal precaution measures for infection prevention. At the same time 20 (12.6 percent) did not know about the universal precaution measures at all.

Out of 157 Waste Handlers interviewed, only 7.6 percent (12) were aware of production of both general and hazardous waste from Health Facilities. About 132 Health Workers (84.1 percent) were found aware of hazardous nature of Health Care Waste but not aware of general waste produced in Health Facilities; 7.6 percent of them were not even aware of production of hazardous waste from Health Facilities *(table 7)*. Waste Handlers need to be made aware of production of both general & hazardous waste from Health Facilities otherwise segregation of 85 percent general waste at source can not be made possible leading to the production of large volume of hazardous waste.

Health Workers of different Health Facilities were asked to recall repeated injuries during health service delivery. Out of 162 HWs only 67 (41.4 percent) recalled repeated injuries due to sharps and needles within one year. About 95 (58.6 percent) said they did not experience repeated injuries. There might be some recall bias regarding this. Highest 55.6 percent of the 18 HWs from Govt owned Hospitals had experienced repeated injuries, followed by Polyclinics/Pathology 50 percent out of 6 HWs interviewed. Least repeated injuries were experienced by HWs (30 percent) from PHCs *(table 8)*.

Total 159 Health Facilities were observed for the use of dustbins and it was found that about 147 (92.5 percent) Health Facilities have dustbins to collect all types of waste. 12 (7.5 percent) HFs were found without dustbins to collect waste.

Total 147 Health Facilities using dustbins were further observed for the use of separate (colored) dustbins for segregation by type of Health Care Waste. About 41 (27.9 percent) HFs were having separate dustbins with different color to segregate waste by its type and 106 (72.1 percent) HFs were using same dustbin for all types of waste. Even in 41 Health Facilities using separate dustbins with color identification, it was not used correctly to segregate Health Care Waste at source and wastes were placed in dustbins other than specified for the particular item. This must be due to less practical orientation of segregation of waste by type in the Health Facilities to HWs as well as Clients and Visitors. In some of the HFs there was clear instruction placed in the wall above the dustbins but even not used as prescribed.

Total 162 Health Workers were asked for the method of Waste Disposal in use and it was found that in122 (75.3 percent) the Health Facilities common method for Waste Disposal is (use of) land pit. About 50 (32.9 percent) use incineration as a method of Waste Disposal and about 13 (8 percent) burn waste in open space. Out of them 11 (6.8 percent) said that they disinfect the waste and throw it, 2 (1.2 percent) said they do not use any method specified *(table 10)*.

Among the 50 Health Facilities using *incineration* as a method of waste disposal 30 said they use their own incinerator regularly, 14 said they use their own incinerator occasionally and 6 said they use nearby (others) incinerator regularly *(table 11)*.

Out of 162 Health Facilities visited 52 (32.1 percent) have their own incinerator and 110 (67.9 percent) do not have one. During observation of 52 HFs with incinerator 30 were found in use and 22 were not in use. Out of 162 HFs visited 32(19.8 percent) have placenta pit and use it. Altogether 19 (11.7 percent) HFs have both placenta pit and incinerator.

Health Workers of 162 Health Facilities were asked for their use of one or more protective measures during work. According to them 64 (39.5 percent) use full sleeve gown, 125 (77.2 percent) use utility glove, 56 (34.6 percent) use gumboot, 82(50.6 percent) use cap, goggles, mask and 22 (13.6 percent)

use other method than specified. According to them, 38 (23.5 percent) Health Workers use 4 or more specified protective measures (satisfactory) and in 124 (76.5 percent) HFs it was not satisfactory (using 3 or less specified measures).

Observation of 159 Health Facilities for verification revealed that only 18 (113 percent) HWs use protective measures satisfactorily and 141 (88.7 percent) do not use protective measures satisfactory *(table 14)*. It can be said that though most of the HWs were found aware of protective measures, its use is not satisfactory. BCC package for the HWs is needed added by continuous supply of protective measures.

Health Workers of 162 Health Facilities were asked about their practice of collecting used sharps. Out of them 97 (59.9 percent) said they use safe container, 23 (14.2 percent) said bucket, 9 (5.6 percent) said cartoon, 13 (8 percent) said they decontaminate sharps after use and 20 (12.3 percent) said they use method other than specified *(table 15)*.

The above Health Facilities were observed for the puncture proof container with cover and foot pedal. Out of them 77 (47.5 percent) HFs were found using puncture proof container with cover & foot pedal for needle, syringe & sharps and 85 (52.2 percent) HFs, were found not using it *(table 16)*.

Health Workers of 162 HFs were asked about their practice of collecting used syringe and needles. About 134 (82.7 percent) HWs said that they use safety box for this purpose. Among them 97.1 percent Health Posts, 95.1 percent Sub Health Posts use safety box, out of 20 PHCs 95 percent use it. Among 18 Government owned Hospitals 94.4 percent and among 26 Pvt. Hospitals/Nursing Home including Teaching Hospitals 61.5 percent use safety box. It is less used in Medical Shops (37.5 percent) and Polyclinics/ Pathology (50 percent).

Out of 159 Health Facilities observed for the use of Safety Box, 133 (83.6 percent) were found using it and 26 (16.4 percent) were found not using it *(figure 6)*.

Health Workers of 162 HFs with different setting were asked for their perception of responsibility of Health Care Waste Management. Out of them 101 (62.35 percent) said it is Health Facility Incharges' responsibility, 10 (6.2 percent) said it is subordinates' responsibility, 25 (15.4 percent) said it is peons' responsibility & 26 (16 percent) said other than specified.

Out of 162 Health Workers of different Health Facilities, 47 (29 percent) were found trained for HCWM and 115 (71 percent) were not trained and need training for this. Maximum 66.7 percent HWs in Government owned Hospitals and 34.6 percent in Private Hospitals/Nursing home/ Teaching Hospital were found trained, 35 percent HWs were found trained in PHC setting, 34.3 percent HWs were found trained in Health Post setting and minimum17.1 percent HWs were found trained in SHP setting. This reveals that training regarding HCWM is needed to the HWs, specially focused to the Health Workers of SHPs and then HPs, followed by Private Hospitals/ Nursing home and PHCs respectively. HWs from Polyclinics/Pathology & Medical Shops were not trained for this at all and need some orientation package regarding Health Care Waste Management *(table 21).*

Out of 157 Waste Handlers of the same number of Health Facilities, 38 (24.2 percent) were found trained and 119 (75.8 percent) were not trained. Waste Handlers are the main person for appropriate HCWM and are exposed to hazardous waste continuously. They need to be trained and updated on HCWM including operation of incinerator as only 24 (15.3 percent) Waste Handlers were found trained whereas 52 Health Facilities out of 162 has Incinerator *(table 22).*

Health Workers were asked for the provision of resources for HCWM. Out of 162 HWs, 52 (37.1 percent) said they have some budget and 110 (67.9 percent) said there is no any provision of budget for HCWM.

Health Workers of 162 Health Facilities were asked for any operational problems regarding HCWM. 70 (43.2 percent) of them said lack of budget is the major problem, 41 (25.3 percent) said lack of commodity for HCWM is the problem, 19 (11.7 percent) said it is management problem and 14(8.64) HWs said that there is no any problem for HCWM.

About 587 clients and visitors of different Health Facilities were interviewed to find out there awareness level and satisfaction regarding Health Care Waste Management. It was found that 548 (93.4 percent) Clients were aware of HCW. About 97.8 percent of the Clients were also aware of necessity of HCW management. Clients were asked about hazards of HCW and about 549 (93.5 percent) were found aware of it.

Out of 587 clients, 370 (63 percent) said HCWM is Health Workers' responsibility, 89 (15.1 percent) said it is the responsibility of all including HW, Municipality, Clients, Community, it self, 61 (11 percent) said it is the

community's responsibility, and 53 (9 percent) said it is Municipality's responsibility 21 (3.58 percent) said it is Clients responsibility.

During focus group discussion, most of the Clients said that though they have not seen the Health Care Waste out side the Health Facility premises and the management within the Health Facilities is some what satisfactory, still it needs to be further improved.

To conclude, the study revealed that though the Health Workers and Waste Handlers are aware of hazards of Health Care Waste to the community and to themselves, their practice regarding Health Care Waste Management is not satisfactory and needs to be improved. It was found that, despite their knowledge about segregation of waste in colored buckets, its practice in the Health Institutions is minimal and needs to be established where it is not and to be reemphasized where it is there but not followed properly.

Health Workers and Waste handlers together need a comprehensive Health Care Waste Management Training including operational management of incinerator and placenta pit.

Three is a need of combined effort of Managers, Health Workers, Waste Handlers, Local Health Facility Management Committee, Municipality, VDCs and Civil Society as well for the management of Health Care Waste right from segregation to the proper disposal of it. Discussion with the Managers of the Health Institutions revealed that common Incinerator or central Autoclaving system for the Disposal of Waste produced from the Health Institutions of a specified area might be a solution, provided there should be a collaborative effort for the installment and operation of the system in place.

1. INTRODUCTION

Waste Management is an inevitable part of human development. It is the face of civilization. Further, health related waste management is an unavoidable part of health service management system. If hazardous waste from Health Facilities will not be managed properly, there will be serious risk of transmission of communicable diseases in the society leading to less productive manpower for development. Management of hazardous waste (medical waste) should be started before the production of waste i.e., from sensitization and awareness campaign to health workers, stakeholders and the general public as well. There should be institutionalization of Health Care Waste Management (HCWM) including proper method of collection, segregation, transportation and disposal which may be dumping, autoclaving or incinerating according to the availability of the method and the nature of health care waste.

2. RATIONALE

In Nepal, though there have been attempts from time to time for the proper management of Health Care Waste; the system is not that much functional and needs further efforts to improve the situation. In general, health care wastes are thrown without any treatment, mostly reaching water bodies. In some places, so called incinerators are built by different development partners but these are less functional due to various reasons. There is not sufficient expertise in the field of health care waste management, leading to slow progress in the management of Health Care waste in health facilities and the related institutions.

According to NHSP-IP (2004-2009), health care waste management is one of the priority areas of health service management. There was developed a plan of action for the year 2005-2007 to strengthen Health Care Waste Management which included development of Health Care Waste Management Committees at different functional levels; Sensitization and Awareness programmes; orientation and capacity

building programmes. The work plan was reviewed in 2007 as it was not that much functional.

Management Division under Department of Health Services is the Focal Division for Health Care Waste Management at functional level and it works through Monitoring, Evaluation and Quality Control Section of the Management Division.

Last Fiscal Year (2063/64) the Management Division attempted to revitalize the Health Care Waste Management programme. It conducted a two day orientation to different stake holders including external development partners and municipality representatives; developed Orientation Manual on Waste Management for periphery level Health Workers; conducted Orientation to the Health Workers (mostly in-charges) of three districts viz. Ilam (Eastern Development Region), Bhaktapur (Central Development Region) and Kailali (Far Western Development Region). It has also developed a draft of Health Care Waste Management guideline with the help of some experts in this field.

Still there is a need to work on HCWM Guideline with further evidence and expertise so that it will be the practical (operational) guideline in the field of Health Care Waste Management. This is supposed to guide Health Care Waste Management of Government Health Organizations; Non-Government Health Organizations; Private Hospitals, Polyclinics and Nursing Homes and other concerned Health Institutions as well.

For this; a general assessment of Health Care Waste Management in different Health Facilities (In Government hospitals & health facilities, private and NGO health facilities) was necessary. To make the Health Care Waste Management Guideline more practical, Management Division conducted such assessment in selected districts of different Development Regions including Mountain, Hill and Terai areas).

3. OBJECTIVES

3.1 GENERAL OBJECTIVE

General Objective of this study is to assess the Health Care Waste Management in different Health Facilities of the country in order to establish Health Care Waste Management as a part of Health Service Delivery System by developing practical Guideline for the whole country.

3.2 SPECIFIC OBJECTIVES

1. To assess the present situation of Health Care Waste Management in Health Facilities of different part of the country
2. To assess the knowledge of Health Care Workers in Health Care Waste Management for the development of Health Care Waste Management Guideline
3. To find out the present practice of Health Care Waste Management in different Health Institutions. (Private and Government)
4. To assess the skill of Health Care Workers on the Health Care Waste Management.

4. METHODOLOGY

4.1 STUDY AREA

Selected Health Institutions of Mountain, Hill and Terai area of different Development Regions of the country were the area for Health Care Waste Management Assessment. The districts were selected purposively. The Health Institutions, both Public and Private were selected after discussions with DHO/ DPHO of the concerned districts.

SELECTED DISTRICTS WITH SELECTED NUMBER OF HEALTH INSTITUTIONS

SN	Name of District	Govt. Hospital	Institutional Clinic	PHC	HP/SHP	Pvt. Hospital, Nursing Home	Polyclinics, Lab	medical shop	Total
FW Region									
1	Dadeldhuda	1	-	1	7	1		2	12
2	Kailali	2	1	1	3	4		3	14
MW Region									
3	Banke	1	1	2	6	5			15
4	Bardiya	1	-	1	7			3	12
Western Region									
5	Rupandehi	2	-	3	8	4	-	-	17
6	Palpa	1	-	1	2	1		3	8
Central Region									
7	Sindhupalchowk	1	-	3	12	-	-	2	18
8	Lalitpur	1		3	9	5			18
9	Bhaktpur	1	1	2	6	3	3		16
Eastern Region									
10	Jhapa	1	1	1	2	1	3	1	10
11	Ilam	1	-	2	6	1	-	2	12
12	Solukhumbu	1	-	-	8	1			10
Total		14	4	20	76	26	6	16	162

4.2 STUDY DESIGN

It is a cross sectional descriptive study. Primary data were collected at one point in time.

4.3 SAMPLING DESIGN

4.3.1 Sampling Universe: All Public and Private Health institutions of the selected district.

4.3.2 Sampling Frame: Record of Health Institutions in the DHO/ DPHO

4.3.3 Sample Size: More than 10 health institutions per districts, including Public and Private Hospitals, Nursing Homes, PHC, HP, SHP, Polyclinics, Medical Shops etc.

4.3.4 Sampling Technique: Purposive sampling was adopted for the selection of districts and Health Institutions were selected after discussion with DHO/DPHO.

4.4. INSTRUMENTATION

1. Questionnaires: Structured close and open ended questionnaires were used for obtaining primary data
2. Client's Satisfaction questionnaire was used.
3. Observation Checklist were used
4. Focus group discussion guideline was used
5. Pre-test was done before data collection & questionnaires adjusted accordingly
6. Orientation: In an average six enumerators were selected for one district (no. was adjusted according to the situation) and were oriented for the method of data collection and technique of interview as well as focus group discussion.

4.4 DATA COLLECTION PROCEDURE

Data collection was done according to the prepared plan. At first primary data was collected by the enumerators with the help of open and close ended questionnaires and observation check list. Further data was collected from Focus Group Discussion among the clients and Focus Group Discussion among the Health Care Providers.

4.5 VALIDITY & RELIABILITY

Draft questionnaires were prepared after discussion with different stake holders. Prepared questionnaires were pre-tested and adjusted accordingly. The enumerators were given a one day orientation about the method and process of data collection. Resource persons from Management Division, RHD and DPHO/DHO closely supervised the activity in the field during data collection.

4.6 DATA PROCESSING

Data were edited for timely detection of errors and omissions to make sure that data were accurately filled. Coding was done in order to facilitate the analysis. Tabulation of raw data was done to summaries it and to display it in a well arranged manner, easy to handle, in an organized form. Dummy table were filled to summarize the data.

Data processing was done with the help of computer software (SPSS) accordingly.

4.7 LIMITATION OF THE STUDY

There were few Private Health Institutions in some selected districts.

In such districts few number of health institutions were selected for the purpose of assessment.

4.8 OUTPUT OF THE STUDY

Health Care Waste Management in different Health Institutions, be it a Public or Private is assessed. This is supposed to sensitize the Health Care Providers as well as other concerned. At the same time it will provide basic information for the development of final Health Care Waste Management Guideline for the country and also for the development of programmes related to the HCW Management to improve KAP of the Health Workers mostly those of working at periphery level.

5. ACTIVITIES

Management Division is the focal division of DoHS for the Health Care Waste Management related programmes. To make it more practical; it decided to conduct an assessment of Health Care Waste Management in different Health Facilities of the selected districts.

After coming to a point of agreement with the resource person of WHO, to conduct the assessment ; a team at Management Division prepared the proposal and questionnaires with the help of experts. Discussion on questionnaires was done in-house and later consulted with Dr. Han Heijnen; Adviser Environmental Health, WHO; resource persons from GTZ, SSMP and others. Consultation and finalization of questionnaires as well as observation checklist was done within 1-3 October, 2007.

The questionnaires and observation check-list were pre-tested from 7-9 October, 2007. Pre-Test was done in peripheral Health Institutions of Bhaktpur district and Shahid Shukraraj Tropical Infectious Disease Hospital, Teku. The Team of resource person revised the questionnaires and adjusted accordingly. Orientation to the supervisory team was given on 9 October, 2007.

Out of 75 districts, 12 districts of Mountain, Hill and Terai Region, were selected purposively. Support for the assessment of 6 districts was from Government of Nepal and another 6 districts from WHO. The Assessment on districts under Government support was started on 10 October, 2007 and that of under WHO was started on 12 Nov, 2007.

5.1 ASSESSMENT OF HEALTH CARE WASTE MANAGEMENT IN 6 DISTRICTS UNDER WHO SUPPORT

The Supervisory team visited Dadeldhura and Bardiya district from 12-17 November, 2007. The team bifurcated into two group at Nepalgunj and went to Dadeldhura and Bardiya separately. Enumerators were selected and given orientation for data collection on the same day at the two districts. There were altogether 26 government owned Health Institutions (District Hospital-1, PHC -1 HP-9, SHP -15), a Team Hospital and some Private Medical Shops in Dadeldhura district. Among them 12 Health Institutions (Govt-9, Private-3); viz; 1 District hospital, 8 periphery Health institutions, 2 medical shops and one Team Hospital were selected and assessed for HCWM in Dadeldhura district.

In Bardiya district 11 Health Institutions (Govt- 8, Private-3) were selected Including district Hospital, for the assessment of HCWM. There were altogether 34 Government owned Health Institutions (Hospital-1, PHC-3, HP-8, SHP-22) and some Medical Shops. Central and district supervisory team closely supervised the field work in both the districts up to 12-17 Nov,2007 and the central team left Dadeldhura on 17 Nov, 2007. In the same manner the second team left Bardiya on 17 Nov, 2007.

The central supervisory team visited Rupandehi district from 18 – 24 Nov, 2007. Enumerators were selected and given orientation for data collection on the same day. There were altogether 69 periphery Government owned Health Institutions (PHC- 5, HP- 6,SHP- 58) and 2 Hospitals as well in Rupandehi District. Altogether 18 Health Institutions (public-14, Private-4) were selected including Lumbini Zonal Hospital, Bhim Hospital, Amda Hospital, Lumbini Nursing Home etc for the assessment of HCWM. Supervisory team closely supervised the field work up to 18-24 Nov, 2007 and the central team left for Kathmandu on 24 Nov, 2007.

Further, the central team visited Jhapa district from 28 Nov -4 Dec, 2007. Enumerators were selected and given orientation for data collection on the next day. There were 51 Government owned Health Institutions (Hospital-1, PHCC-6, HP-6, SHP-38) at periphery level and a Zonal Hospital at Head-quarters. Altogether 11 Health Institutions were selected (Public -5, Private -6) including Koshi Zonal Hospital, for the assessment of HCWM. Central and district supervisory team closely supervised the field work up to 29 Nov–4 Dec, 2007.

The central team moved Lalitpur from 11 – 15 Dec, 2007. Enumerators were selected and given orientation for data collection on the same day. There were altogether 42 periphery Government owned Health Institutions (PHC-4, HP-9, SHP-29) and 2 Hospitals in Lalitpur district. Among them 18 Health Institutions were selected (Public-13, Private-5) for the assessment of HCWM. The selected Health Institutions include Private Hospitals/Nursing Homes and Patan Hospital as well. Central and district level supervisory team closely supervised the field work up to 11-15 Dec, 2007 on a daily basis from Kathmandu.

Finally, the central team visited Sindhupalchowk from 16-21 Dec, 2007. Enumerators were selected and given orientation for data collection on the same day. There were 78 Government owned Health Institutions at periphery level (PHC- 3, HP- 10, SHP- 65) and a District Hospital at Head-quarters. There were also some Private Medical Shops. Amongst them 18 Health Institutions (Public-16, Private-2) were selected for the purpose of assessment including District Hospital and Private Medical Shops. Data collection was done from 16 -21 Dec, 2007. Central and district supervisory team closely supervised the field work.

5.2 ASSESSMENT OF HEALTH CARE WASTE MANAGEMENT IN 6 DISTRICTS UNDER GOVERNMENT SUPPORT

The Supervisory team visited Kailali district from 10 - 17 Oct, 2007. Enumerators were selected and given a one day orientation for data collection. There were altogether 45 Government owned Health Institutions (District Hospital-2, PHC -5, HP-7, SHP -31), 4 Private Hospital and some Medical Shops in Kailali district. Out of them 14 Health Institutions were selected (Govt-7, Private-7) for Health Care Waste Management. The HFs selected were Hospital-2, PHC-1, HP-2, SHP-1, Pvt. Hospital-4 and Medical Shop-3. Data collection was done from 10 -17 Oct, 2007.

The central team visited Banke district from 5- 10 Dec, 2007. In Banke district there were altogether 48 Government Health Institutions (Hospital-1, PHC-3, HP-9, SHP-35). Out of this 15 Health Institutions (Govt-10, Private-5) were selected including zonal hospital-1, PHC-2, HP-2, SHP-4, and private Hospital/Nursing Home-5 for the assessment of HCWM. Data collection was done from 5-10 Dec, 2007. Central and district supervisory team closely supervised the field work.

The central supervisory team visited Bhaktapur district from 4-9 Nov, 2007. Enumerators were selected and given orientation for data collection on the same day. There was altogether 22 periphery Health Institutions (Hospital-1, PHC-2, HP-7, SHP- 12) in Bhaktapur District. Altogether 16 Health Institutions (public-10, Private-6) were selected including Hospital-2, PHC-2, HP-3, SHP-3, Pvt. Hospital-3 and polyclinic/Pathology-3 were selected for the purpose of HCWM assessment Supervisory team closely supervised the field work on a daily basis.

Further, the central team visited Solukhambu district from 23-28 Nov, 2007. Enumerators were selected and given orientation for data collection on the same day. There were 35 Govt Health Institutions (Hospital-1, PHCC-2, HP-9, SHP-23) at periphery level. Altogether 10 Health Institutions were selected (Public-9, Private-1) including Hospital-1, HP-3, SHP-5, and Pvt. Hospital/ Nursing Home-1 for the

assessment of HCWM. Central and district supervisory team closely supervised the field work.

The central team visited Ilam from 14-20, Nov 2007. Enumerators were selected and given orientation for data collection on the same day. There was altogether 50 periphery Health Institutions (Hospital-1, PHC-4, HP-6, SHP-38) in Lalitpur district. Among them 12 Health Institutions were selected (Public-9, Private-3) for the assessment of HCWM. The selected Health Institutions include Hospital-1, PHC-2, HP-2, SHP-4, Private Hospitals and Nursing Homes-1 and Medical Shop-2. Central and district level supervisory team closely supervised the field work.

Another central team visited Palpa district from 14-21 Nov, 2007. Enumerators were selected and given orientation for data collection on the same day. There were 68 Health Institutions at periphery level (PHC-3, HP-9, SHP-53) and 2 District Hospitals at Head-quarters. There were also some private medical shops. Amongst them 8 Health institutions (Public-4, Private-4) were selected for the purpose of assessment including district hospital-1, PHC-1, HP-1, SHP-1, Private Nursing Home-1 and 3 Medical Shops. Data collection was done from 14 -20 Nov, 2007. Central and district team closely supervised the field work.

Data entry was done side by side immediately after data collection in order to facilitate timely completion of data processing. Primary data analysis and the report preparation were done from 21 to 26 Dec, 2007. Finalization of the report is done after discussion with different resource persons.

6. FINDINGS

FIGURE 1- DIFFERENT LEVEL OF HEALTH FACILITIES VISITED DURING HCWM ASSESSMENT

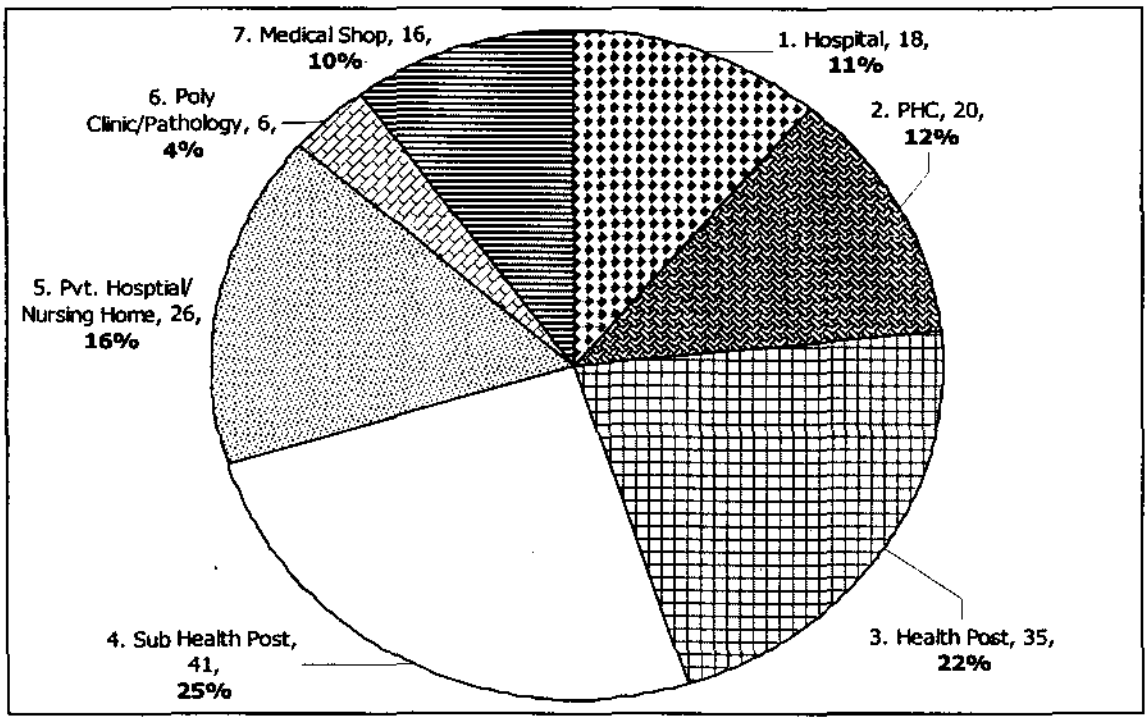


Figure 1 shows the number and percentage of different level of Health Facilities visited during assessment of Heath Care Waste Management in selected districts. Altogether 162 Health Facilities were visited. Among them 18 (11%) were Government owned Hospitals, 20 (12%) Primary Health Care Centers, 35 (22%) Health Posts, 41(25%) Sub Health Posts, 26(16%) Private Hospital/ Nursing Homes, 6 (4%) Polyclinic/Pathology and 16(10%) were Medical Shops.

TABLE 1- DIFFERENT LEVEL OF HEALTH FACILITIES ASSESSED FOR HCWM IN SELECTED DISTRICTS

District	1. Hospital		2. PHC		3. Health Post		4. Sub Health Post	
	No.	%	No.	%	No.	%	No.	%
Banke	2	11.1	2	10.0	2	5.7	4	9.8
Bardia	1	5.6	1	5.0	4	11.4	3	7.3
Bhaktapur	2	11.1	2	10.0	3	8.6	3	7.3
Dadeldhura	1	5.6	1	5.0	3	8.6	4	9.8
Ilam	1	5.6	2	10.0	2	5.7	4	9.8
Jhapa	2	11.1	1	5.0	1	2.9	1	2.4
Kailali	3	16.7	1	5.0	2	5.7	1	2.4
Lalitpur	1	5.6	3	15.0	3	8.6	6	14.6
Palpa	1	5.6	1	5.0	1	2.9	1	2.4
Rupendehi	2	11.1	3	15.0	3	8.6	5	12.2
Sindhupalchowak	1	5.6	3	15.0	8	22.9	4	9.8
Solukhumbu	1	5.6	0	0.0	3	8.6	5	12.2
Grand Total	**18**	**100**	**20**	**100**	**35**	**100**	**41**	**100**

District	5. Pvt. Hospital/ Nursing Home		6. Poly Clinic/ Pathology		7. Medical Shop		Grand Total	
	No.	%	No.	%	No.	%	No.	%
Banke	5	19.2	0	0.0	0	0.0	15	9.3
Bardia	0	0.0	0	0.0	3	18.8	12	7.4
Bhaktapur	3	11.5	3	50.0	0	0.0	16	9.9
Dadeldhura	1	3.8	0	0.0	2	12.5	12	7.4
Ilam	1	3.8	0	0.0	2	12.5	12	7.4
Jhapa	1	3.8	3	50.0	1	6.3	10	6.2
Kailali	4	15.4	0	0.0	3	18.8	14	8.6
Lalitpur	5	19.2	0	0.0	0	0.0	18	11.1
Palpa	1	3.8	0	0.0	3	18.8	8	4.9
Rupendehi	4	15.4	0	0.0	0	0.0	17	10.5
Sindhupalchowak	0	0.0	0	0.0	2	12.5	18	11.1
Solukhumbu	1	3.8	0	0.0	0	0.0	10	6.2
Grand Total	**26**	**100**	**6**	**100**	**16**	**100**	**162**	**100**

Table 1 shows the number and percentage of different level of Health Facilities Assesed for Health Care Waste Management per selected district. Altogether 12 districts as Himal, Hilly and Terai region were selected for HCWM assessment. Maximum 18 and minimum 8 Health Facilities were visited per district. The highest number of Health Facilities (18) were visited in Laltipur and Sindhupalchok districts. Such as 17 HFs were visited in Rupendehi, 16 in Bhaktapur, 15 in Banke, 14 in Kailali, 12 in Bardia, Dadeldhura & Ilam, 10 in Jhapa & Solukhumbu, the lowest 8 Health Facilites in Palpa.

6A. KNOWLEDGE OF RESPONDENTS REGARDING HEALTH CARE WASTE MANAGEMENT

TABLE 2- RESPONDENTS (HW) AWARE OF BOTH GENERAL AND HAZARDOUS WASTE PRODUCED IN HEALTH FACILITIES.

Health Facility	Yes		No.		Total	
	No.	%	No.	%	No.	%
1. Hospital	16	88.9	2	11.1	18	100
2. PHC	15	75	5	25.0	20	100
3. Health Post	29	82.9	6	17.1	35	100
4. Sub Health Post	26	63.4	15	36.6	41	100
5. Pvt. Hospital/ Nursing Home	23	88.5	3	11.5	26	100
6. Poly Clinic/Pathology	4	66.7	2	33.3	6	100
7. Medical Shop	10	62.5	6	37.5	16	100
Grand Total	**123**	**75.9**	**39**	**24.1**	**162**	**100**

According to the table 2 about 75.9% Health Workers posses knowledge about the General and Hazardous Waste produced in Health Facilities. About 24.1% Health Workers did not know that both types of waste are produced in Health Facilities. It is found that 88.9% HWs of Government owned Hospitals were aware of it followed by HWs from Private

Hospitals/Nursing Homes. HWs from Medical Shops were least aware (62.5%), follwed by those of Polyclinics/Pathology (66.7%).

TABLE 3- KNOWLEDGE OF RESPONDENTS (HWS) ABOUT MEDICAL WASTE AND ITS HAZARDS

Health Facility	Adequate		Inadequate		Grand Total	
	No.	%	No.	%	No.	%
1. Hospital	16	88.9	2	11.1	18	100
2. PHC	16	80.0	4	20.0	20	100
3. Health Post	27	77.1	8	22.9	35	100
4. Sub Health Post	24	58.5	17	41.5	41	100
5. Pvt. Hosptial/ Nursing Home	21	80.8	5	19.2	26	100
6. Poly Clinic/Pathology	4	66.7	2	33.3	6	100
7. Medical Shop	8	50.0	8	50.0	16	100
Grand Total	116	71.6	46	28.4	162	100

Table 3 shows that the Health Workers posses adequate Knowledge about Medical waste as well as its Hazards. Among them Maximum Health Workers from Hospital setting (88.9 percent) were found with adequate knowledge on the above matter followed by those of working in Pvt. Hospitals/ Nursing Homes (80.8 percent) and then those of working in PHC (80 percent). Health Workers in Medical Shops were found with least knowledge (50%), followed by those of working in Sub Health Posts (58.5%).out of 162 Health Workers 28.4% did not have adequate knowledge on the above matter. The data shows that HWs in Medical Shops in private sector and HWs in Sub Health Post in Government sector should be imparted knowledge based on DoHS Guidelines first on Medical Waste and its Hazards followed by Health Workers in Polyclinics/Pathology and Health Post.

TABLE 4- KNOWLEDGE OF SEGREGATION OF HEALTH CARE WASTE AT SOURCE (BY QA)

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	17	94.4	1	5.6	18	100
2. PHC	16	80.0	4	20	20	100
3. Health Post	28	80.0	7	20	35	100
4. Sub Health Post	35	85.4	6	14.6	41	100
5. Pvt. Hospital/ Nursing Home	24	92.3	2	7.7	26	100
6. Poly Clinic/Pathology	6	100.0	0	0	6	100
7. Medical Shop	15	93.8	1	6.3	16	100
Grand Total	**141**	**87.0**	**21**	**13**	**162**	**100**

Table 4 shows the respondents' Knowledge on need of segregation of Health Care Waste at Health Facilities. About 87 % of the Respondents (HWs) said that the segregation of waste immediate after it's production is necessary. Though, it was not found during the spot observation of Health Facilities. This shows that their knowledge on segregation of

Health Care Waste is sufficient but practice is insufficient thus needs to be improved.

TABLE 5- KNOWLEDGE OF RESPONDENTS (HW) ABOUT DIFFERENT STEPS OF HEALTH CARE WASTE MANAGEMENT

Health Facility	Recycling		Segregation at source		Storage		Collection		Disposal		Public Education		All above	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	9	50.0	14	77.8	9	50.0	17	94.4	18	100.0	7	38.9	4	22.2
2. PHC	4	20.0	13	65.0	4	20.0	15	75.0	19	95.0	5	25.0	-	0.0
3. Health Post	12	34.3	20	57.1	6	17.1	21	60.0	34	97.1	14	40.0	4	11.4
4. Sub Health Post	7	17.1	18	43.9	7	17.1	20	48.8	38	92.7	14	34.1	2	4.9
5. Pvt. Hospital/ Nursing Home	9	34.6	15	57.7	11	42.3	18	69.2	25	96.2	12	46.2	3	11.5
6. Poly Clinic/Pathology	1	16.7	3	50.0	2	33.3	5	83.3	6	100.0	2	33.3	1	16.7
7. Medical Shop	0	0.0	5	31.3	4	25.0	9	56.3	16	100.0	2	12.5	-	0.0
Grand Total	42	25.9	88	54.3	43	26.5	105	64.8	156	96.3	56	34.6	14	8.6

Table 5 shows the Health Workers knowledge on different steps of Health Care Waste Management. Maximum HWs (96.3%) specify disposal as a step, 64.8% specify collection, 54.3% specify segregation at source, 34.6% Public education and 25.9% specify recycling as a step of Waste Management Only 14 (8.6%)of the HWs specify all the mentioned steps of HCWM.

TABLE 6- KNOWLEDGE LEVEL OF RESPONDENTS (HW) ABOUT TOTAL PROCESS OF HEALTH CARE WASTE MANAGEMENT

Health Facility	Adequate knowledge		Satisfactory		Inadequate		Grand Total	
	No.	%	No.	%	No.	%	No.	%
1. Hospital	7	38.9	9	50.0	2	11.1	18	100
2. PHC	6	30.0	6	30.0	8	40.0	20	100
3. Health Post	6	17.1	17	48.6	12	34.3	35	100
4. Sub Health Post	5	12.2	11	26.8	25	61.0	41	100
5. Pvt. Hospital/ Nursing Home	6	23.1	11	42.3	9	34.6	26	100
6. Poly Clinic/Pathology	2	33.3	1	16.7	3	50.0	6	100
7. Medical Shop		0.0	7	43.8	9	56.3	16	100
Grand Total	**32**	**19.8**	**62**	**38.3**	**68**	**42.0**	**162**	**100**

>4 Adequate Knowledge, 3-4 Satisfactory, <=2, Inadequate Knowledge,

Table 6 shows the knowledge level of Health Workers working in different Health Facilities regarding HCWM. It was revealed that only 32(19.8%) of the Health Workers possess adequate knowledge about HCWM as they were able to answer 5 to 6 questions out of 6. About 62 (38.3%) HWs were able to answer 3 to 4 questions out of 6 and are categorised as having satisfactory knowledge. About 68 (42%) HWs were not able to

answer more than 2 questions thus have inadequate knowledge regarding HCWM. Highest 38.9% HWs of Hospitals have adequaye knowledge followed by Polyclinics/Pathology (33.3%) and PHC (30%). This shows that the HWs in Evey setting of Health Facility be it a Private or Government owned, need to be trained for total Health Care Waste Management.

FIGURE 2- HEALTH WORKERS AWARE OF UNIVERSAL PRECAUTION MEASURES FOR INFECTION PREVENTION

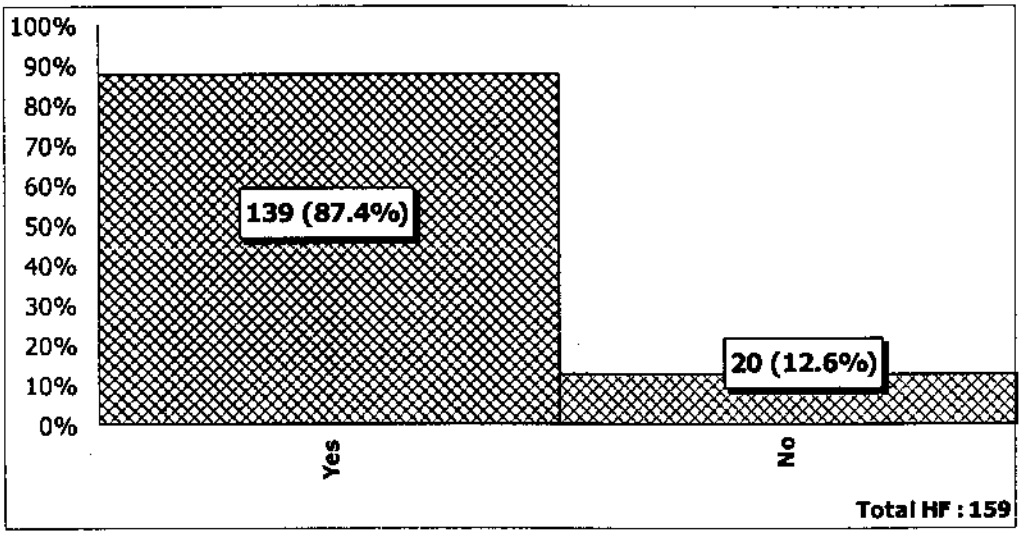


Figure 2 shows the Health Workers' awareness of the universal precaution measures. Data shows that 87.4 of the HWs are aware of it and only 12.6% are not aware of it.

TABLE 7- WASTE HANDLERS AWARE OF BOTH GENERAL AND HAZARDOUS WASTE PRODUCED BY HEALTH FACILITIES.

Health Facility	Both		General		Dangerous		others		Grand Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	0	0.0	1	5.6	17	94.4	0	0.0	18	100
2. PHC	3	15.0		0.0	17	85.0	0	0.0	20	100
3. Health Post	5	13.5	5	13.5	27	73.0	0	0.0	37	100
4. Sub Health Post	0	0.0	3	8.1	33	89.2	1	2.7	37	100
5. Pvt. Hospital/ Nursing Home	0	0.0	3	11.5	23	88.5	0	0.0	26	100
6. Poly Clinic/Pathology	0	0.0		0.0	5	100.0	0	0.0	5	100
7. Medical Shop	4	28.6		0.0	10	71.4	0	0.0	14	100
Grand Total	**12**	**7.6**	**12**	**7.6**	**132**	**84.1**	**1**	**0.6**	**157**	**100**

Table 7 shows knowledge of Waste Handlers about Health Care Waste. Out of 157 respondents only 12 (7.6%) have knowledge about the production of both General and Hazardous waste in the Health Facilities. About 12 (7.6%) Waste Handlers said that only General Waste is produced in Health Facilities. About 132 (84.1%) Waste Handlers said that only Hazardous Waste is produced in Health

Hazardous nature of the HCW, incomplete knowledge about it may produce difficulty in segregation of about 85% General Waste at source thus making large volume of hazardous waste. This shows that the Waste Handlers of most of the Health Facilities need proper training focused on both knowledge and skill part.

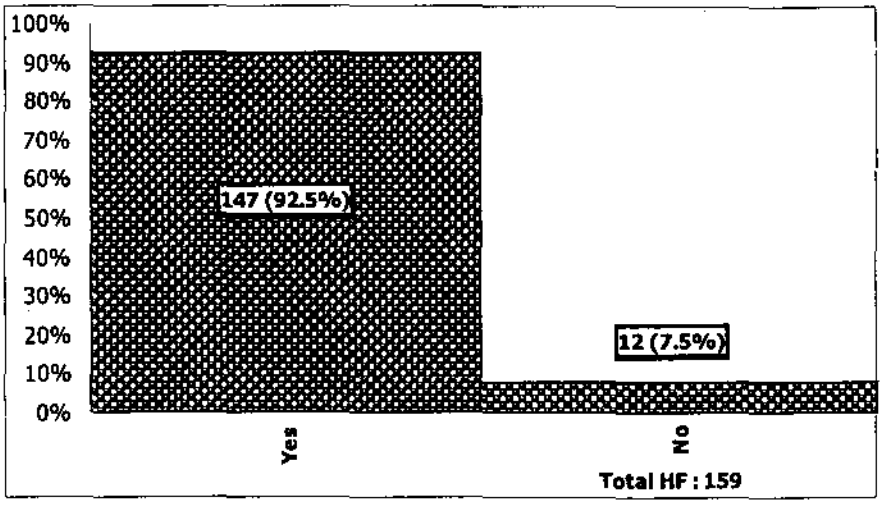
6B. PRACTICE OF RESPONDENTS REGARDING HEALTH CARE WASTE MANAGEMENT

TABLE 8- HEALTH WORKERS RECALL ON REPEATED INJURIES DUE TO SHARPS AND NEEDLES

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	10	55.6	8	44.4	18	100
2. PHC	6	30	14	70.0	20	100
3. Health Post	12	34.3	23	65.7	35	100
4. Sub Health Post	18	43.9	23	56.1	41	100
5. Pvt. Hospital/ Nursing Home	11	42.3	15	57.7	26	100
6. Poly Clinic/Pathology	3	50	3	50.0	6	100
7. Medical Shop	7	43.8	9	56.3	16	100
Grand Total	**67**	**41.4**	**95**	**58.6**	**162**	**100**

Table 8 shows Health Workers recall on repeated injuries due to sharp instruments and needles within one year. About 67 (41.4%) Health Workers recall that they faced repeated injuries while providing Health Care Services. 95 (58.6) Health Worker said that they did not faced repeated injuries while providing Health Care Services. Maximum (55.6%) Health Workers recalled repeated injuries in government owned Hospitals followed by (50%) of the same in Polyclinics/Pathology. Minimum (30%) Health Workers recalled repeated injuries in Primary Health Care Centers followed by (34.3) in Health Posts. His may be due to more exposure of Health Workers to needles and sharps in Hospital setting and relatively less exposure in PHC and Health Post setting.

FIGURE 3- PRACTICE OF USING DUSTBINS IN HEALTH FACILITIES (OBSERVATION)



During observation of about 159 HFs it was found that 147 (92.5%) use the dustbin to collect all types of waste in common. Only 12 (7.5%) of the HFs were found with out dustbins.

TABLE 9- PRACTICE OF USING SEPARATE DUST BINS (SEGREGATION) BY TYPE OF WASTE IN HEALTH FACILITY (OBSERVATION)

Health Facility	Yes		No.		Total	
	No.	%	No.	%	No.	%
1. Hospital	13	72.2	5	27.8	18	100
2. PHC	5	25.0	15	75.0	20	100
3. Health Post	3	9.1	30	90.9	33	100
4. Sub Health Post	1	3.1	31	96.9	32	100
5. Pvt. Hosptial/ Nursing Home	16	69.6	7	30.4	23	100
6. Poly Clinic/Pathology	2	40.0	3	60.0	5	100
7. Medical Shop	1	6.3	15	93.8	16	100
Grand Total	**41**	**27.9**	**106**	**72.1**	**147**	**100**

Practice of using separate dustbins for the segregation of different types of waste was found in only 41 (27.9%) out of 147 Health Facilities. Though the use of dustbin is usual in HFs (table 8), using separate bins for segregation of HCW at source is found minimum.

TABLE 10- METHODS (IN USE) FOR HEALTH CARE WASTE DISPOSAL IN HEALTH FACILITIES (QA)

Health Facility	Use of land pit		Incineration		Burning in Open space		Make Disinfection & throw		No Any	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	10	55.6	13	72.2	2	11.1	1	5.6	0	0.0
2. PHC	17	85.0	6	30.0	1	5.0	2	10.0	0	0.0
3. Health Post	31	88.6	10	28.6	2	5.7	2	5.7	0	0.0
4. Sub Health Post	35	85.4	6	14.6	4	9.8	1	2.4	1	2.4
5. Pvt. Hospital/ Nursing Home	17	65.4	14	53.8	0	0.0	2	7.7	1	3.8
6. Poly Clinic/Pathology	3	50.0	0	0.0	1	16.7	1	16.7	0	0.0
7. Medical Shop	9	56.3	1	6.3	3	18.8	2	12.5	0	0.0
Grand Total	**122**	**75.3**	**50**	**30.9**	**13**	**8.0**	**11**	**6.8**	**2**	**1.2**

Table 10 shows the methods in use for the disposal of Health Care Waste in different Health Facilities. Out of 162 H Fs majority i.e. 122 (75.3%) use land pit followed by incineration (30.9%). 13 Health Facilities (8%) practice burning HCW in open space. 6.8% said they disinfect and throw the HC Waste and 2 HF (1.2%) said they don't use any method to dispose HCW.

TABLE 11- HEALTH CARE WASTE DISPOSAL AS A METHOD OF INCERATION IN HEALTH FACILITIES (QA)

Health Facility	Use own incinerator regularly		Use own incinerator Occasionally		Use other's Incinerator Regularly		Total	
	No.	%	No.	%	No.	%	No.	%
1. Hospital	8	61.5	1	7.7	4	30.8	13	100
2. PHC	4	66.7	2	33.3	0	0.0	6	100
3. Health Post	7	70.0	3	30.0	0	0.0	10	100
4. Sub Health Post	3	50.0	3	50.0	0	0.0	6	100
5. Pvt. Hosptial/ Nursing Home	8	57.1	5	35.7	1	7.1	14	100
6. Poly Clinic/Pathology								
7. Medical Shop		0.0	0	0.0	1	100.0	1	100
Grand Total	**30**	**60.0**	**14**	**28.0**	**6**	**12.0**	**50**	**100**

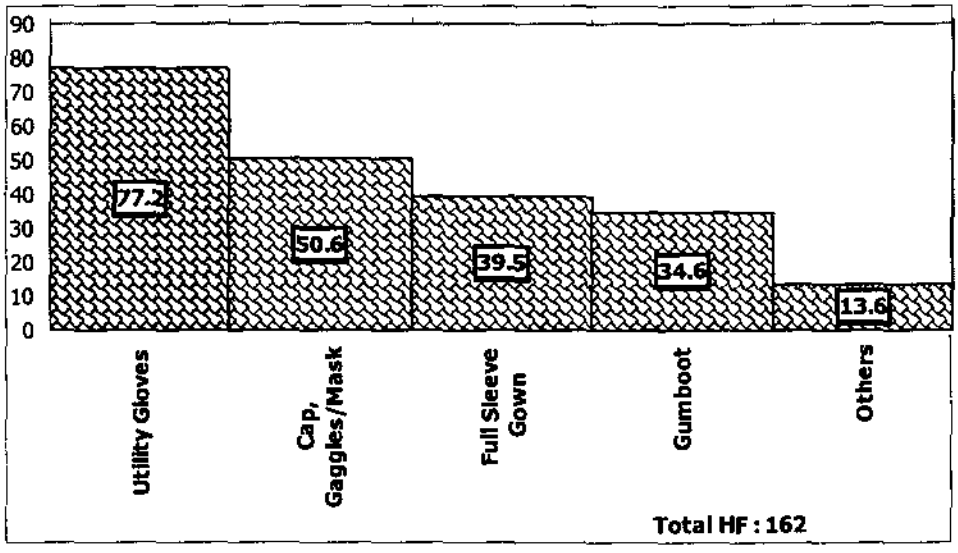
Table 11 shows the HFs using incineration as a method of Waste Disposal. Out of 50 HFs using this method 30 (60%) HFs have their own incinerator and use it regularly, 14 (28%) HFs have their own incinerator but used occasionally and 6 (12%) use incinerator owned by nearby Hospital. These are Institutional Clinic Jhapa, Institutional Clinic Banke, Institutional Clinic Kailali, Cancer Hospital Bhaktpur, Medical College Nepalgunj and Chandimai Medical Shop Tikapur, Kailali.

TABLE 12- USE OF PROTECTIVE MEASURES BY HEALTH WORKERS WHILE HANDLING HAZARDOUS WASTE (QA)

Health Facility	Full Sleeve Gown		Utility Gloves		Gumboot		Cap, Goggles/Mask		Others	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	13	72.2	17	94.4	13	72.2	14	77.8	4	22.2
2. PHC	9	45.0	17	85.0	8	40.0	8	40.0	2	10.0
3. Health Post	8	22.9	24	68.6	7	20.0	13	37.1	5	14.3
4. Sub Health Post	10	24.4	27	65.9	6	14.6	16	39.0	4	9.8
5. Pvt. Hospital/ Nursing Home	15	57.7	26	100.0	16	61.5	21	80.8	5	19.2
6. Poly Clinic/Pathology	3	50.0	6	100.0	4	66.7	4	66.7	0	0.0
7. Medical Shop	6	37.5	8	50.0	2	12.5	6	37.5	2	12.5
Grand Total	**64**	**39.5**	**125**	**77.2**	**56**	**34.6**	**82**	**50.6**	**22**	**13.6**

Health Workers were asked about the use of protective measures. 64 (39.5%) HWs said that they use full sleeve gown (table 12). Likewise 125 (77.2%) said they use utility glove, 56 (34.6%) gumboot, 82(50.6%) cap, goggles/ mask and 13.6% said that they use protective measures other than above.

FIGURE 4- USE OF PROTECTIVE MEASURES BY HEALTH WORKERS WHILE HANDLING HAZARDOUS WASTE (QA)



The above figure 4 shows the use of infection prevention measures in ascending order. Out of 162 respondents (HWs) maximum said that they use utility gloves (77.2%) followed by cap, goggles and gown (50.6%), full sleeve gown (39.5%) and gumboot (34.6%).

TABLE 13- PRACTICE OF USING PROTECTIVE MEASURES BY HEALTH WORKERS WHILE HANDLING HAZARDOUS WASTE (QA)

Health Facility	Satisfactory		Not Satisfactory		Grand Total	
	No.	%	No.	%	No.	%
1. Hospital	11	61.1	7	38.9	18	100
2. PHC	2	10	18	90.0	20	100
3. Health Post	5	14.3	30	85.7	35	100
4. Sub Health Post	4	9.8	37	90.2	41	100
5. Pvt. Hospital/ Nursing Home	11	42.3	15	57.7	26	100
6. Poly Clinic/Pathology	3	50	3	50.0	6	100
7. Medical Shop	2	12.5	14	87.5	16	100
Grand Total	**38**	**23.5**	**124**	**76.5**	**162**	**100**

Health workers were asked about the use of protective measures. it was found that 38 (23.5%) out of 162 said they use more than 4 specified measures and categorized as satisfactory while 124 (76.5%) said they use less than 4 measures and categorized as not satisfactory *(Table 13)*.

TABLE 14- USE OF INFECTION PREVENTION MEASURES IN DIFFERENT HEALTH FACILITIES (OBSERVATION)

Health Facility	Satisfactory		Not Satisfactory		Grand Total	
	No.	%	No.	%	No.	%
1. Hospital	6	33.3	12	66.7	18	100
2. PHC	0	0	20	100.0	20	100
3. Health Post	3	8.3	33	91.7	36	100
4. Sub Health Post	1	2.5	39	97.5	40	100
5. Pvt. Hospital/ Nursing Home	4	16.7	20	83.3	24	100
6. Poly Clinic/Pathology	3	60	2	40.0	5	100
7. Medical Shop	1	6.3	15	93.8	16	100
Grand Total	**18**	**11.3**	141	88.7	**159**	**100**

During observation it was found that out of 159 HFs only 18 (11.3%) Health workers were found using more then 4 specified measures and 141 (88.7%) HWs were found using less than 4 specified protective measures.

TABLE 15- PRACTICE OF COLLECTING USED SHARPS IN DIFFERENT HEALTH FACILITIES (QA)

Health Facility	Safe Container		Bucket		Cartoon		Decontamination		Others		Grand Total	
	No	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	12	66.7	2	11.1	0	0.0	3	16.7	1	5.6	18	100
2. PHC	17	85.0	0	0.0	1	5.0	1	5.0	1	5.0	20	100
3. Health Post	20	57.1	3	8.6	1	2.9	4	11.4	7	20.0	35	100
4. Sub Health Post	24	58.5	8	19.5	3	7.3	3	7.3	3	7.3	41	100
5. Pvt. Hospital/ Nursing Home	18	69.2	4	15.4	0	0.0	1	3.8	3	11.5	26	100
6. Poly Clinic/Pathology	1	16.7	1	16.7	0	0.0	1	16.7	3	50.0	6	100
7. Medical Shop	5	31.3	5	31.3	4	25.0	0	0.0	2	12.5	16	100
Grand Total	**97**	**59.9**	**23**	**14.2**	**9**	**5.6**	**13**	**8.0**	**20**	**12.3**	**162**	**100**

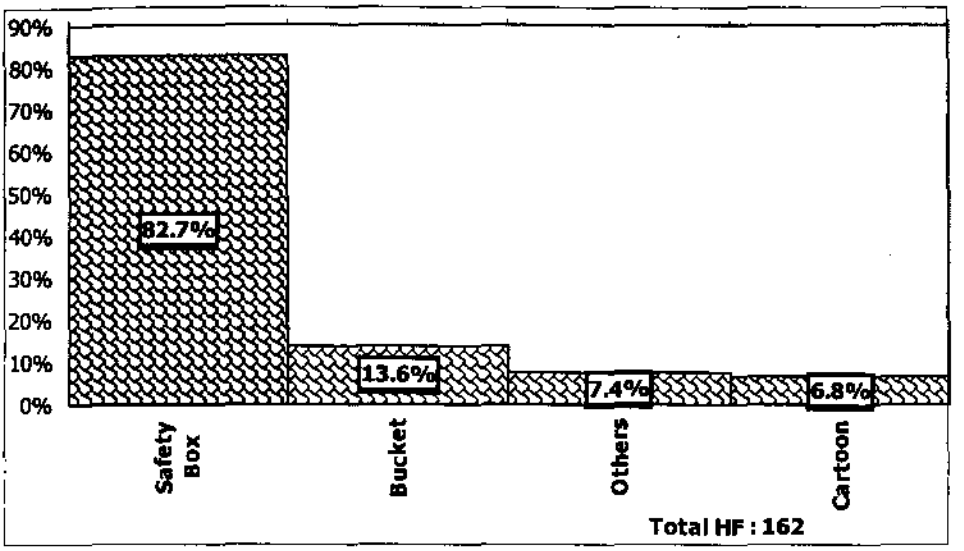
Out of 162 respondents (HW) 97 (59.9%) said that they use safe container to collect used sharps, 23 (14.2%) said bucket, 9 (5.6%) cartoon and 13 (8%) said that they practice decontamination. About 20 (12.3%) HWs said that they practice method other than specified *(Table 15)*.

TABLE 16- NUMBER AND PERCENTAGE OF HEALTH FACILITIES HAVING PUNCTURE PROOF CONTAINER WITH COVER AND FOOT PEDAL (OBSERVATION)

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	10	55.6	8	44.4	18	100
2. PHC	13	65.0	7	35.0	20	100
3. Health Post	19	54.3	16	45.7	35	100
4. Sub Health Post	13	31.7	28	68.3	41	100
5. Pvt. Hospital/ Nursing Home	16	61.5	10	38.5	26	100
6. Poly Clinic/Pathology	3	50.0	3	50.0	6	100
7. Medical Shop	3	18.8	13	81.3	16	100
Grand Total	**77**	**47.5**	**85**	**52.5**	**162**	**100**

Health Facilities were observed for the use of puncture proof container with cover and foot pedal. It was found that though 97 HWs said that they use safe container *(Table 15)*, only 77 (47.5%) use puncture proof container with cover and foot pedal. 52.5% HWs need behavior change communication package to improve their practices regarding the use of safe container in order to avoid infection transmission *(Table 15)*.

FIGURE 5- PRACTICE OF COLLECTING USED SYRINGE & NEEDLES IN DIFFERENT HEALTH FACILITIES (QA)



Health Workers were asked about their practice of collecting Used syringe & needles in the Health Facilities. It was found that 82.7% of the HWs practice the use of safety box, 13.6% said they use bucket, 6.8% cartoon and 7.4 % of the HWs said that they use method other than specified *(Figure 5)*.

TABLE 17- PRACTICE OF COLLECTING USED SYRINGE AND NEEDLES IN DIFFERENT HEALTH FACILITIES

Health Facility	Safety Box		Bucket		Cartoon		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	17	94.4	2	11.1	0	0.0	1	5.6	18	100
2. PHC	19	95.0	2	10.0	0	0.0	1	5.0	20	100
3. Health Post	34	97.1	3	8.6	1	2.9	1	2.9	35	100
4. Sub Health Post	39	95.1	2	4.9	1	2.4	1	2.4	41	100
5. Pvt. Hospital/ Nursing Home	16	61.5	8	30.8	0	0.0	5	19.2	26	100
6. Poly Clinic/Pathology	3	50.0	1	16.7	2	33.3	2	33.3	6	100
7. Medical Shop	6	37.5	4	25.0	7	43.8	1	6.3	16	100
Grand Total	**134**	**82.7**	**22**	**13.6**	**11**	**6.8**	**12**	**7.4**	**162**	**100**

Table 17 shows respondents (HWs) answer regarding the practice of collecting used syringe and needles in different Health Facilities. Out of 162 HFs 134 (82.7%) said they use safety box, 22 (13.6%) bucket, 11(6.8%) cartoon and 12 (7.4%) said that they practice other method than above specified. Maximum Health Posts (97.1%) were found practicing use of safety box followed by Sub Health Posts (95.1%) and PHCs (95%) respectively. Medical Shops were least (37.5%) in using safety box followed by Polyclinics/Pathology (50%).

TABLE 15- PRACTICE OF COLLECTING USED SHARPS IN DIFFERENT HEALTH FACILITIES (QA)

Health Facility	Safe Container		Bucket		Cartoon		Decontamination		Others		Grand Total	
	No	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	12	66.7	2	11.1	0	0.0	3	16.7	1	5.6	18	100
2. PHC	17	85.0	0	0.0	1	5.0	1	5.0	1	5.0	20	100
3. Health Post	20	57.1	3	8.6	1	2.9	4	11.4	7	20.0	35	100
4. Sub Health Post	24	58.5	8	19.5	3	7.3	3	7.3	3	7.3	41	100
5. Pvt. Hospital/ Nursing Home	18	69.2	4	15.4	0	0.0	1	3.8	3	11.5	26	100
6. Poly Clinic/Pathology	1	16.7	1	16.7	0	0.0	1	16.7	3	50.0	6	100
7. Medical Shop	5	31.3	5	31.3	4	25.0	0	0.0	2	12.5	16	100
Grand Total	**97**	**59.9**	**23**	**14.2**	**9**	**5.6**	**13**	**8.0**	**20**	**12.3**	**162**	**100**

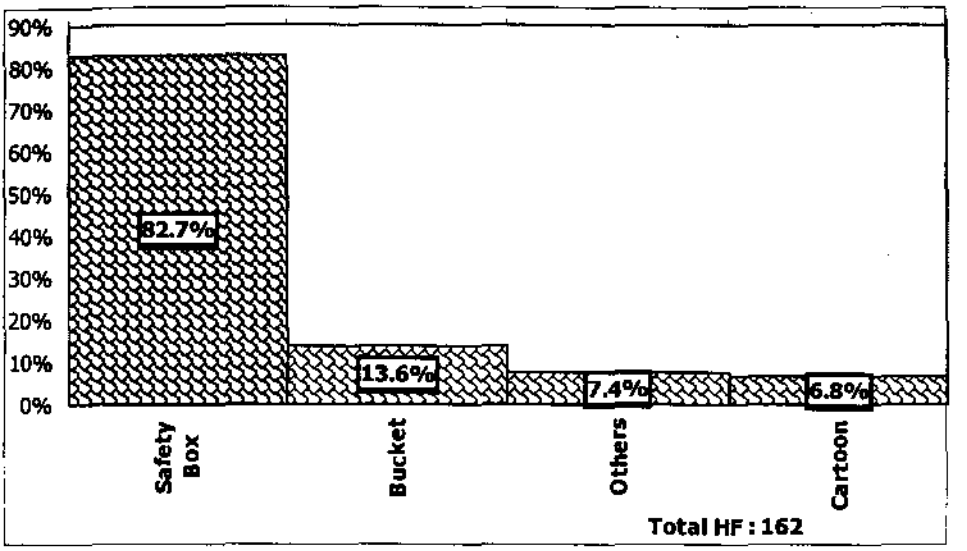
Out of 162 respondents (HW) 97 (59.9%) said that they use safe container to collect used sharps, 23 (14.2%) said bucket, 9 (5.6%) cartoon and 13 (8%) said that they practice decontamination. About 20 (12.3%) HWs said that they practice method other than specified *(Table 15)*.

TABLE 16- NUMBER AND PERCENTAGE OF HEALTH FACILITIES HAVING PUNCTURE PROOF CONTAINER WITH COVER AND FOOT PEDAL (OBSERVATION)

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	10	55.6	8	44.4	18	100
2. PHC	13	65.0	7	35.0	20	100
3. Health Post	19	54.3	16	45.7	35	100
4. Sub Health Post	13	31.7	28	68.3	41	100
5. Pvt. Hospital/ Nursing Home	16	61.5	10	38.5	26	100
6. Poly Clinic/Pathology	3	50.0	3	50.0	6	100
7. Medical Shop	3	18.8	13	81.3	16	100
Grand Total	**77**	**47.5**	**85**	**52.5**	**162**	**100**

Health Facilities were observed for the use of puncture proof container with cover and foot pedal. It was found that though 97 HWs said that they use safe container *(Table 15)*, only 77 (47.5%) use puncture proof container with cover and foot pedal. 52.5% HWs need behavior change communication package to improve their practices regarding the use of safe container in order to avoid infection transmission *(Table 15)*.

FIGURE 5- PRACTICE OF COLLECTING USED SYRINGE & NEEDLES IN DIFFERENT HEALTH FACILITIES (QA)



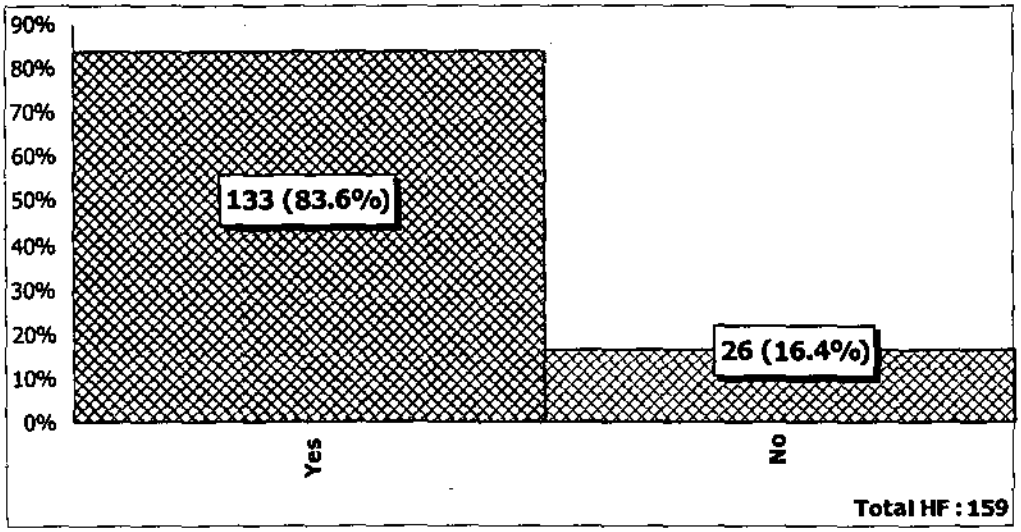
Health Workers were asked about their practice of collecting Used syringe & needles in the Health Facilities. It was found that 82.7% of the HWs practice the use of safety box, 13.6% said they use bucket, 6.8% cartoon and 7.4 % of the HWs said that they use method other than specified *(Figure 5)*.

TABLE 17- PRACTICE OF COLLECTING USED SYRINGE AND NEEDLES IN DIFFERENT HEALTH FACILITIES

Health Facility	Safety Box		Bucket		Cartoon		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	17	94.4	2	11.1	0	0.0	1	5.6	18	100
2. PHC	19	95.0	2	10.0	0	0.0	1	5.0	20	100
3. Health Post	34	97.1	3	8.6	1	2.9	1	2.9	35	100
4. Sub Health Post	39	95.1	2	4.9	1	2.4	1	2.4	41	100
5. Pvt. Hospital/ Nursing Home	16	61.5	8	30.8	0	0.0	5	19.2	26	100
6. Poly Clinic/Pathology	3	50.0	1	16.7	2	33.3	2	33.3	6	100
7. Medical Shop	6	37.5	4	25.0	7	43.8	1	6.3	16	100
Grand Total	**134**	**82.7**	**22**	**13.6**	**11**	**6.8**	**12**	**7.4**	**162**	**100**

Table 17 shows respondents (HWs) answer regarding the practice of collecting used syringe and needles in different Health Facilities. Out of 162 HFs 134 (82.7%) said they use safety box, 22 (13.6%) bucket, 11(6.8%) cartoon and 12 (7.4%) said that they practice other method than above specified. Maximum Health Posts (97.1%) were found practicing use of safety box followed by Sub Health Posts (95.1%) and PHCs (95%) respectively. Medical Shops were least (37.5%) in using safety box followed by Polyclinics/Pathology (50%).

FIGURE 6- USE OF SAFETY BOX IN HEALTH FACILITIES (BY OBSERVATION)



About 159 Health Facilities were observed for the use of Safety Box in the Health Facilities. It was found that 83.6% of the HFs uses Safety Box which is quite impressive *(Figure 6)*.

6C. PERCEPTION ABOUT THE RESPONSIBILITY OF THE HEALTH CARE WASTE MANAGEMENT

TABLE 18- PERCEPTION OF RESPONDENTS (HW) ABOUT THE RESPONSIBLE PERSON FOR HEALTH CARE WASTE MANAGEMENT IN HEALTH FACILITIES

Health Facility	Respondents perception of responsible person									
	In-charge		Sub-Ordinate		Peon		Others		Grand Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	11	61.11	3	16.7	2	11.1	2	11.1	18	100
2. PHC	11	55	0	0.0	7	35.0	2	10.0	20	100
3. Health Post	23	65.71	0	0.0	5	14.3	7	20.0	35	100
4. Sub Health Post	25	60.98	1	2.4	7	17.1	8	19.5	41	100
5. Pvt. Hospital/ Nursing Home	13	50	5	19.2	3	11.5	5	19.2	26	100
6. Poly Clinic/Pathology	5	83.33	1	16.7	0	0.0	0	0.0	6	100
7. Medical Shop	13	81.25	0	0.0	1	6.3	2	12.5	16	100
Grand Total	**101**	**62.35**	**10**	**6.2**	**25**	**15.4**	**26**	**16.0**	**162**	**100**

Table 18 shows the perception of Health Workers about responsible person for HCWM in different Health Facilities. About 62.35% Health Workers answered that Health Facility Incharge is responsible for HCWM, 115.4% said Peon is responsible and 15.4% said Sub-ordinate staff is responsible for this. 16% said that person other than specified above is responsible for this.

TABLE 19- RESPONDENTS (HW) PERCEPTION OF RESPONSIBLE ORGANISATION FOR HEALTH CARE WASTE MANAGEMENT (QA))

Health Facility	Respondents perception of Responsible organisation									
	Municipality		Health Facility		Government		All above		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	4	22.2	4	22.2	0	0.0	10	55.6	18	100.0
2. PHC	1	5.0	9	45.0	1	5.0	9	45.0	20	100.0
3. Health Post	0	0.0	17	48.6	1	2.9	17	48.6	35	100.0
4. Sub Health Post	0	0.0	31	75.6	0	0.0	10	24.4	41	100.0
5. Pvt. Hospital/ Nursing Home	1	3.8	11	42.3	1	3.8	13	50.0	26	100.0
6. Poly Clinic/Pathology	1	16.7	0	0.0	0	0.0	5	83.3	6	100.0
7. Medical Shop	2	12.5	5	31.3	0	0.0	9	56.3	16	100.0
Grand Total	**9**	**5.6**	**77**	**47.5**	**3**	**1.9**	**73**	**45.1**	**162**	**100.0**

Table 19 shows the HWs perception of responsible organisation for HCWM. This is supposed to play a vital role in the disposal of Health Care Waste and its total Management. Out of 162 HWs 73 (45.1%) said that it is the responsibility of all including Health Facility, Municipality and the Government. This is a positive behavior. Maximum 77 (47.5%) HWs said that it is the sole responsibility of the Health Facility. This shows there awareness of responsibility but lacking necessity of coordination between other sectors. According to the 9 (5.6%) HWs it is the responsibility of municipality and that of 3 (1.9%) it is the responsibility of the Government.

TABLE 20- PERCENTAGE OF WASTE HANDLERS PERCEIVING ANY HEALTH EFFECT DUE TO WASTE HANDLING

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	6	33.3	12	66.7	18	100
2. PHC	7	35	13	65.0	20	100
3. Health Post	10	27	27	73.0	37	100
4. Sub Health Post	4	10.8	33	89.2	37	100
5. Pvt. Hospital/ Nursing Home	2	7.7	24	92.3	26	100
6. Poly Clinic/Pathology		0	5	100.0	5	100
7. Medical Shop	5	35.7	9	64.3	14	100
Grand Total	34	21.7	123	78.3	157	100

According to the table 20, Out of 157 Waste Handlers only 34 (21.7%) perceive some health effects due to waste handling. About 123 (78.3%) Waste Handlers were not aware of the negative health effects due to waste handling. Waste Handlers need to be aware of the negative health effects and preventive measures for their safety.

6D. TRAINING REGARDING HCWM

TABLE 21- PERCENTAGE OF HEALTH WORKERS TRAINED FOR HEALTH CARE WASTE MANAGEMENT

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	12	66.7	6	33.3	18	100
2. PHC	7	35	13	65.0	20	100
3. Health Post	12	34.3	23	65.7	35	100
4. Sub Health Post	7	17.1	34	82.9	41	100
5. Pvt. Hospital/ Nursing Home	9	34.6	17	65.4	26	100
6. Poly Clinic/Pathology	0	0	6	100.0	6	100
7. Medical Shop	0	0	16	100.0	16	100
Grand Total	**47**	**29**	**115**	**71.0**	**162**	**100**

Table 21 shows the Percentage of Health Workers trained for Health Care Waste Management in different settings of Health Facilities. Altogether 29 percent Health Workers were trained for HCWM and 115 (71%) were not trained for this. In Hospital setting percentage of Health Workers (66.7%) trained for HCWM is more than in other settings of Health Facility followed by PHC (35%), Pvt. Hospital/ Nursing Home (34.6) and Health Post (34.3%) respectively. Health Workers in Polyclinics/Pathology and Medical Shops were found all not trained for HCWM and only 17.1% Health Workers were found trained in Sub Health Post setting.

TABLE 22- PERCENTAGE OF WASTE HANDLERS TRAINED FOR HEALTH CARE WASTE MANAGEMENT IN DIFFERENT HEALTH FACILITIES

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	12	66.7	6	33.3	18	100
2. PHC	2	10	18	90.0	20	100
3. Health Post	8	21.6	29	78.4	37	100
4. Sub Health Post	5	13.5	32	86.5	37	100
5. Pvt. Hospital/ Nursing Home	10	38.5	16	61.5	26	100
6. Poly Clinic/Pathology		0	5	100.0	5	100
7. Medical Shop	1	7.1	13	92.9	14	100
Grand Total	**38**	**24.2**	**119**	**75.8**	**157**	**100**

Table 22 shows the percentage of Waste Handlers trained for HCWM. Out of 157 Waste Handlers, only 38 (24.2%) Waste Handlers were found trained for HCWM. 75.8% of the Waste Handlers were found untrained in HCWM. It reveals a need of integrated training package for Waste Handlers in Health Care Waste Management.

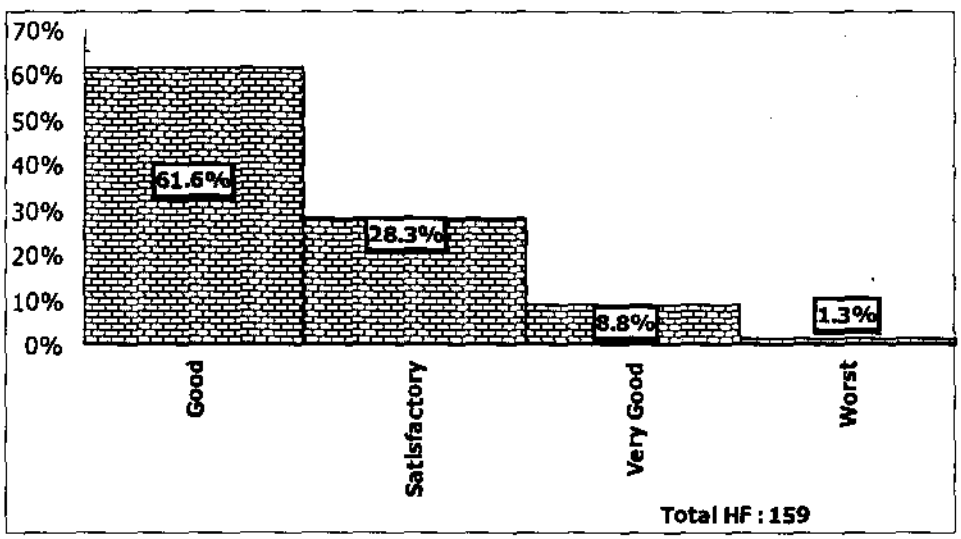
TABLE 23- NUMBER AND PERCENTAGE OF WASTE HANDLERS TRAINED TO OPERATE INCINERATOR

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	6	33.3	12	66.7	18	100
2. PHC	1	5	19	95.0	20	100
3. Health Post	5	13.5	32	86.5	37	100
4. Sub Health Post	3	8.1	34	91.9	37	100
5. Pvt. Hospital/ Nursing Home	8	30.8	18	69.2	26	100
6. Poly Clinic/Pathology		0	5	100.0	5	100
7. Medical Shop	1	7.1	13	92.9	14	100
Grand Total	24	15.3	133	84.7	157	100

According to the table 23, out of 157 Waste Handlers, only 24 (15.3%) were found trained to operate incinerator. Though there were 52 HFs with incinerators out of 162 HFs visited.

6E. GENERAL MANAGEMENT REGARDING HEALTH CARE WASTE

FIGURE 6- GENERAL CLEANLINESS OF HEALTH FACILITIES DURING OBSERVATION



During observation about 8.8% of the HFs was found very well regarding general cleanness. Likewise 61.6% of the HFs was found good, 28.3% HFs were found satisfactory and only 1.3 % was found worst in general cleanliness.

TABLE 24- HEALTH FACILITIES HAVING PLACENTA PIT AND INCINERATOR (HFS)

Health Facility	Placenta Pit		Incinerator		Both		No any		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	10	55.6	12	66.7	10	55.6	6	33.3	18	100
2. PHC	5	25.0	7	35.0	3	15.0	11	55.0	20	100
3. Health Post	7	20.0	11	31.4	2	5.7	19	54.3	35	100
4. Sub Health Post	2	4.9	7	17.1	1	2.4	33	80.5	41	100
5. Pvt. Hospital/ Nursing Home	7	26.9	15	57.7	3	11.5	7	26.9	26	100
6. Poly Clinic/Pathology	1	16.7		0.0		0.0	5	83.3	6	100
7. Medical Shop		0.0		0.0		0.0	16	100.0	16	100
Grand Total	**32**	**19.8**	**52**	**32.1**	**19**	**11.7**	**97**	**59.9**	**162**	**100**

Table 24 shows the HFs with Placenta Pit and Incinerator. Out of 162 Health Facilities 52 (32.1%) have incinerator and 32 (19.8%) Health Facilities have Placenta Pit. Among them, about 19 (11.7%) Health Facilities have both Incinerator and Placenta Pit. About 97 (59.9%) Health facilities have neither incinerators nor Placenta Pit.

FIGURE 7- NUMBER AND PERCENTAGE OF HEALTH FACILITIES WITH INCINIAETOR (OBSERVATION)

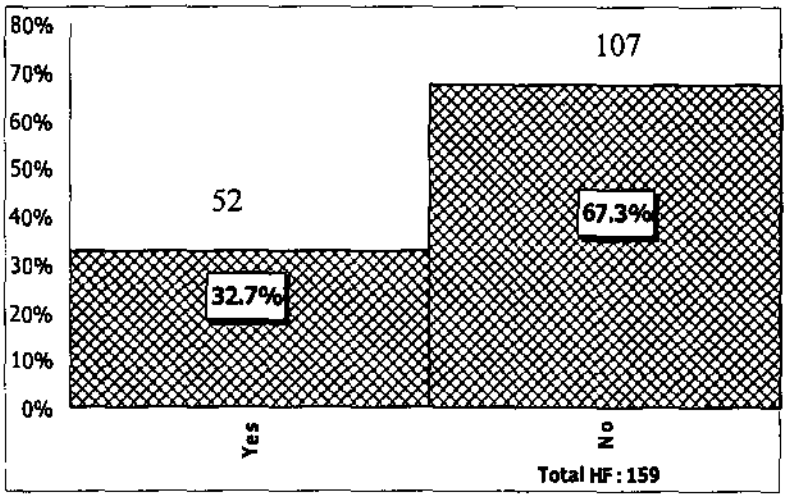


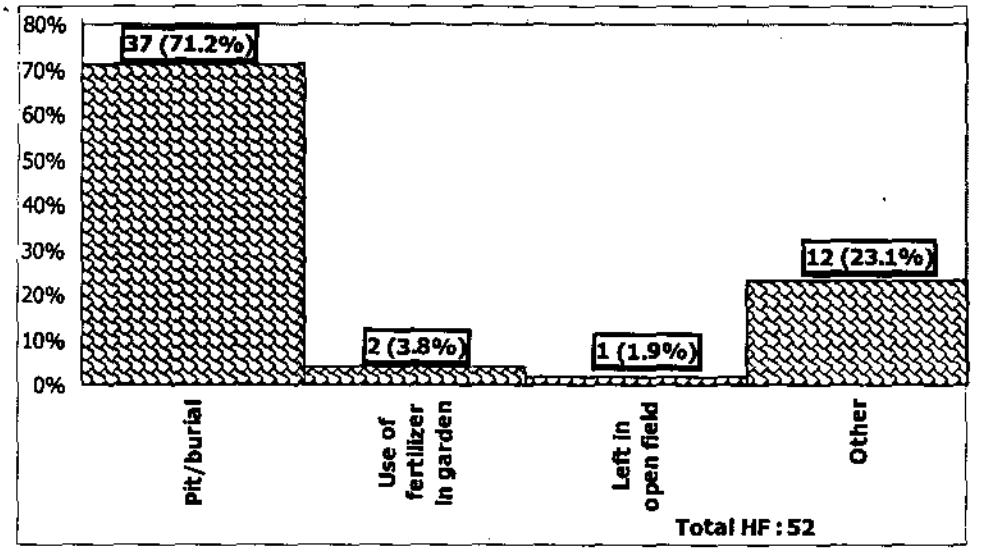
Figure 7 shows the Number and percentage of Incinerator in Health Facilities. Observation of 159 Health Facilities revealed that 52 (32.7%) of them have Incinerator and 107 (67.3%) do not have incinerator. Incinerators of the Health Facilities visited were not maintained and need repairment for better function. Further (as per discussion with the management of the HFs) most of them are of less capacity then required. Some of them need to be dismantled for a new construction.

TABLE 25- USE OF INCINERATOR IN THE HEALTH FACILITIES (OBSERVATION)

Health Facility	Use		Not use		Total	
	No.	%	No.	%	No.	%
1. Hospital	8	66.67	4	33.33	12	100
2. PHC	4	57.14	3	42.86	7	100
3. Health Post	7	63.64	4	36.36	11	100
4. Sub Health Post	3	42.86	4	57.14	7	100
5. Pvt. Hosptial/ Nursing Home	8	53.33	7	46.67	15	100
6. Poly Clinic/Pathology						
7. Medical Shop						
Grand Total	30	57.69	22	42.31	52	100

Table 25 shows the HFs with incinerator and its use. It was found that 57.69% incinerators were somewhat in use though they were not fully functional, 42.3% incinerators were not in use at all. During observation and discussion with HWs and WHs it was also found that the incinerators were not regularly functional, were of less capacity than the required capacity, and not maintained at all. HWs were not skillful in operating incinerator and need training. Most of the incinerators were located at place which was not operationally feasible, thus caused scattered waste around the premises in spite of the availability of incinerator. Lack of focal person in Health Facilities to manage incinerator also caused the less use of available incinerator.

FIGURE 8 - DIFFERENT PRACTICES OF DISPOSING ASH PRODUCED FROM INCINERATOR (IN %) (HFS)



Respondents were asked about the practice of disposing ash produced during incineration and it was found that 71.2% dispose ash in pit burial, 3.8% use as fertilizer, 1.9% left it in a open space and 23.1% did not use the specified methods to dispose ash *(Figure 8).*

IGURE 9- USE OF PLACENTA PIT IN THE HEALTH FACILITIES (OBSERVATION)

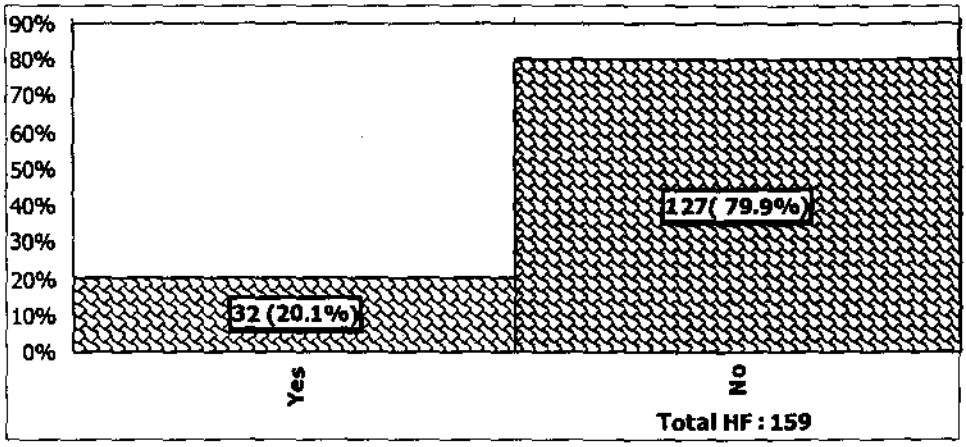
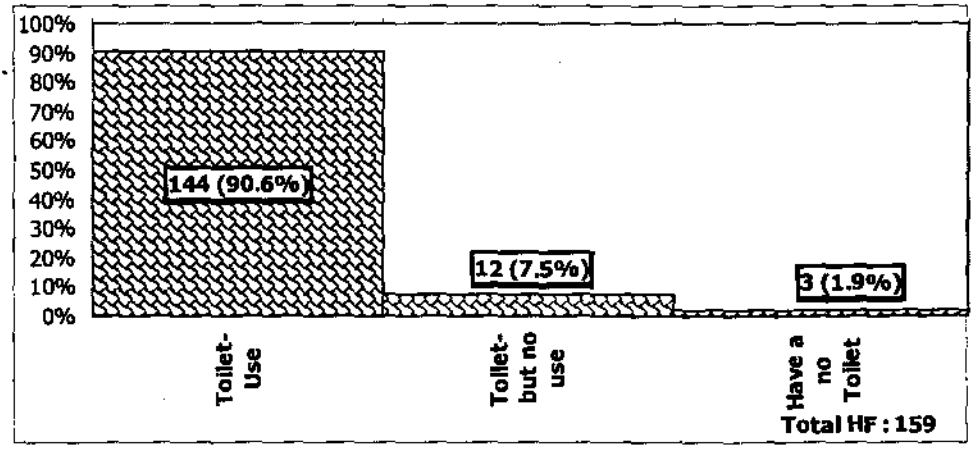


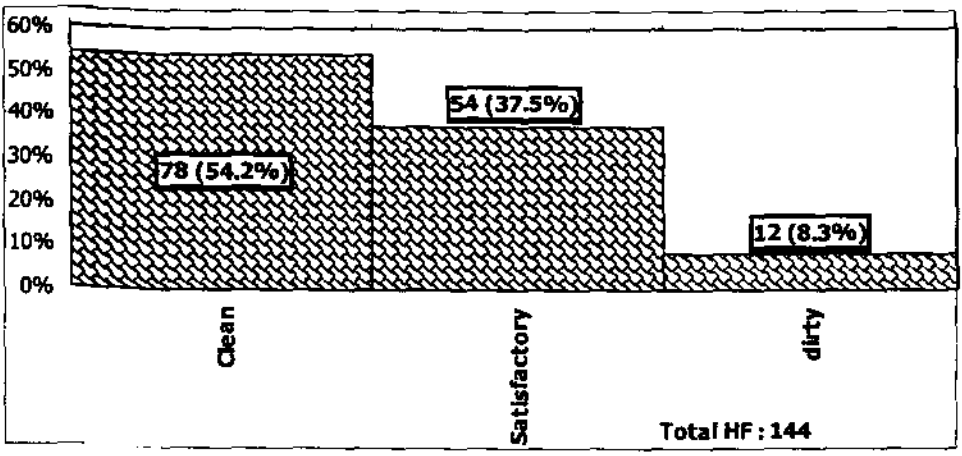
Figure 9 shows the use of Placenta Pit in the Health Facilities. Observation of 159 Health Facilities revealed that only 32 (20.1%) have placenta pit and use it for the disposal of placenta. About 127 (79.9%) of the Health Facilities have no Placenta Pit to dispose placenta so they use traditional way to dispose placenta.

FIGURE 10- TOILET IN USE WITHIN HEALTH FACILITY PREMISES (OBSERVATION)



Out of 159 HFs there were toilets in 156. Out of 156 HF with toilet only toilets of 144 (90.6%) HFs was in use. About 12 (7.5%) HFs have toilet but was not in use and there was no toilet in 3 (1.9%) Health Facilities *(figure 10).*

FIGURE 11- CONDITION OF TOILET IN USE WITHIN HEALTH FACILITIES PREMISES (OBSERVATION)



The Health Facilities were observed for the conditions of toilets were ever it is in use. using toilets were observed for the cleanliness of it, about 78 (54.2%) HFs had clean toilets, 54 (37.5%) HFs had satisfactory toilets, 12 (8.3%) HFs were found with dirty toilets out of 144 HFs.

TABLE 26- AVAILABILITY OF BUDGET FOR HCWM IN DIFFERENT HEALTH FACILITIES

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	6	33.3	12	66.7	18	100
2. PHC	5	25	15	75.0	20	100
3. Health Post	8	22.9	27	77.1	35	100
4. Sub Health Post	4	9.8	37	90.2	41	100
5. Pvt. Hosptial/ Nursing Home	22	84.6	4	15.4	26	100
6. Poly Clinic/Pathology	4	66.7	2	33.3	6	100
7. Medical Shop	3	18.8	13	81.3	16	100
Grand Total	**52**	**32.1**	**110**	**67.9**	**162**	**100**

Health Workers were asked about the availability of the budget for HCWM in their Health Facilities. Total 52 (32.1%) said that budget is available whereas 110(67.9%) said there is no any provision of budget for the Health Care Waste Management *(Table 26).*

TABLE 27- CATEGORY OF OPERATIONAL PROBLEMS FOR HCWM IN DIFFERENT HEALTH FACILITIES (HFs)

Health Facility	No Problem		Lack of Budget		Lack of commodity		Management Problem		Others		Grand Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Hospital	3	16.67	9	50.0	2	11.1	3	16.7	1	5.6	18	100
2. PHC	1	5	11	55.0	6	30.0	1	5.0	1	5.0	20	100
3. Health Post		0	20	57.1	8	22.9	3	8.6	4	11.4	35	100
4. Sub Health Post	1	2.439	21	51.2	17	41.5	2	4.9		0.0	41	100
5. Pvt. Hospital/ Nursing Home	5	19.23	5	19.2	5	19.2	5	19.2	6	23.1	26	100
6. Poly Clinic/Pathology	1	16.67		0.0		0.0	1	16.7	4	66.7	6	100
7. Medical Shop	3	18.75	4	25.0	3	18.8	4	25.0	2	12.5	16	100
Grand Total	**14**	**8.64**	**70**	**43.2**	**41**	**25.3**	**19**	**11.7**	**18**	**11.1**	**162**	**100**

Health Workers of 162 HFs were asked about operational problems for Health Care Waste Management. According to them major (43.2%) said that problem is due to lack of budget, followed by (25.1%) lack of commodity such as colored buckets, bins etc. Only 11.7% said that it was management problem and 11.1% said there are other problems than specified about. 8.6% HWs said that there is no problem at all for HCWM *(Table 27)*.

6F. CLIENTS' AWARENESS AND SATISFACTION AND AWARENESS

TABLE 28- CLIENTS' AWARENESS REGARDINGF HEALTH CARE WASTE

Health Facility	Yes		No		Total	
	No.	%	No.	%	No.	%
1. Hospital	75	90.4	8	9.6	83	100
2. PHC	70	90.9	7	9.1	77	100
3. Health Post	108	93.9	7	6.1	115	100
4. Sub Health Post	150	94.9	8	5.1	158	100
5. Pvt. Hosptial/ Nursing Home	98	93.3	7	6.7	105	100
6. Poly Clinic/Pathology	12	100		0.0	12	100
7. Medical Shop	35	94.6	2	5.4	37	100
Grand Total	**548**	**93.4**	**39**	**6.6**	**587**	**100**

Table 28 shows the clients' awareness regarding HCW. About 587 clients visiting different Health Facilities were interviewed .Maximum 548 (93.4%) were aware of Health Care Waste. Only 39 (6.6%) were found not aware of Health Care Waste.

TABLE 29- CLIENTS AWARENESS ABOUT THE HAZARDS OF HEALTH CARE WASTE

Health Facility	Yes		No		Don't Know		Grand Total	
	No.	%	No.	%	No.	%	No.	%
1. Hospital	77	92.8	6	7.2	0	0.0	83	100
2. PHC	76	98.7	0	0.0	1	1.3	77	100
3. Health Post	108	93.9	5	4.3	2	1.7	115	100
4. Sub Health Post	145	91.8	11	7.0	2	1.3	158	100
5. Pvt. Hospital/ Nursing Home	99	94.3	1	1.0	5	4.8	105	100
6. Poly Clinic/Pathology	12	100	0	0.0	0	0.0	12	100
7. Medical Shop	32	86.5	4	10.8	1	2.7	37	100
Grand Total	549	93.5	27	4.6	11	1.9	587	100

According to the table 29 out of 587 clients of different Health Facilities 549 (93.5%) clients were aware of hazards of Health Care Waste.

FIGURE 12- CLIENTS AWARE OF NECESSITY OF HCW MANAGEMENT

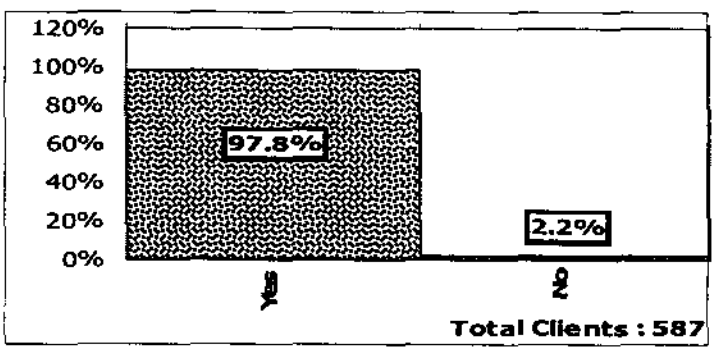


Figure 12 shows the Clients' awareness regarding necessity of HCW Management. Out of 567 clients visiting different Health Facilities 97.8% were aware of necessity of HCW Management which seems interesting.

TABLE 30- CLIENTS PERCEPTION ABOUT GENERAL CLEANLINESS OF HEALTH FACILITIES

Health Facility	better		Satisfactory		Not Satisfactory		Worst		N/A		Grand Total	
	No.	%	No.	%	No.	%	No	%	No	%	No.	%
1. Hospital	21	25.3	47	56.6	12	14.5	2	2.4	1	1.2	83	100
2. PHC	24	31.2	47	61.0	6	7.8		0.0		0.0	77	100
3. Health Post	28	24.3	76	66.1	5	4.3	1	0.9	5	4.3	115	100
4. Sub Health Post	36	22.8	103	65.2	17	10.8		0.0	2	1.3	158	100
5. Pvt. Hospital/ Nursing Home	32	30.5	68	64.8	4	3.8	1	1.0	0	0.0	105	100
6. Poly Clinic/Pathology	6	50.0	4	33.3	1	8.3	1	8.3	0	0.0	12	100
7. Medical Shop	12	32.4	24	64.9	1	2.7		0.0	0	0.0	37	100
Grand Total	159	27.1	369	62.9	46	7.8	5	0.9	8	1.4	587	100

About 587 clients were asked their view about general cleanliness of Health Facilities they visited. General people had perceived the

cleanness of health facilities as satisfactory (62.9 percent) and 27.1 percent better while 7.8 percent perceived as not satisfactory and 1 percent as worst *(Table 30)*.

TABLE 31- CLIENTS' PERCEPTION OF RESPONSIBLE PERSON FOR HEALTH CARE WASTE MANAGEMENT

Health Facility	Municipality/ VDC		Health Workers		Clients		Community itself		Others		All		Grand Total	
	No.	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Hospital	13	24.5	42	11.4	8	38.1	5	8.2	2	18.2	21	23.6	83	14.1
2. PHC	3	5.7	50	13.5	3	14.3	8	13.1	2	18.2	13	14.6	77	13.1
3. Health Post	5	9.4	73	19.7	3	14.3	15	24.6	2	18.2	19	21.3	115	19.6
4. Sub Health Post	13	24.5	114	30.8	4	19.0	17	27.9	2	18.2	11	12.4	158	26.9
5. Pvt. Hospital/ Nursing Home	13	24.5	62	16.8	2	9.5	7	11.5	3	27.3	20	22.5	105	17.9
6. Poly Clinic/Pathology	1	1.9	7	1.9	0	0.0	0	0.0	0	0.0	4	4.5	12	2.0
7. Medical Shop	5	9.4	22	5.9	1	4.8	9	14.8	0	0.0	1	1.1	37	6.3
Grand Total	53	100.0	370	100.0	21	100.0	61	100.0	11	100.0	89	100.0	587	100.0
	9%		63%		3.58%		11%				15.1 1%			

Other: Government, HF, Peon & Management Committee

Table 32 shows the Clients' Perception of Responsible person for Health Care Waste Management. About 370 (63.03 %) clients out of 587 said it is Health Workers responsibility. Similarly 61 (12.60 %) clients said it is the responsibility of Community itself and 53 (10.95%) said it is Municipality's responsibility.

TABLE 32- CLIENTS' INTERACTION WITH HWS ABOUT HEALTH CARE WASTE MANAGEMENT

Health Facility	Yes		No		N/A		Grand Total	
	No.	%	No.	%	No.	%	No.	%
1. Hospital	9	10.8	74	89.2	0	0	83	100
2. PHC	6	7.79	69	89.6	2	2.6	77	100
3. Health Post	16	13.9	97	84.3	2	1.74	115	100
4. Sub Health Post	21	13.3	137	86.7	0	0	158	100
5. Pvt. Hospital/ Nursing Home	9	8.57	94	89.5	2	1.9	105	100
6. Poly Clinic/Pathology	1	8.33	11	91.7	0	0	12	100
7. Medical Shop	3	8.11	33	89.2	1	2.7	37	100
Grand Total	65	11.1	515	87.7	7	1.19	587	100

Table 32 shows Clients' interaction with HWs about Health Care Waste Management Out of 587 Clients interviewed only 65 (11.1%) said that they interact with the Health Workers in the matter of Health Care Waste Management. This shows that Clients were not aware of there joint responsibility of HCWM in Health Facilities as a member of the society.

3.3. Focus Group Discussion

Focus group discussion was conducted with the Health Workers, Waste Handlers and with the Clients.

a. *Focus group discussion with the Health Workers and Waste Handlers*

Focus group discussion with Health Workers revealed that most of them have satisfactory knowledge of HCWM and area ware of precautions against HCWM, but still they need behaviour change communication package in order to improve their attitude as well as skill regarding HCWM. Waste Handlers said that they have less skill to operate incinerator and need training for the betterment. On the other hand, according to them there are different problems regarding management of Health Care Waste in Health Facilities. According to them, lack of specific Health Care Waste Management policy, rule, regulation and operational guidelines causes difficulty to strengthen HCWM at institutional level.

In most of the Health Institutions there is no provision of regular supply of commodity such as colored buckets, bin etc. and budget for HCWM. Most of the Health Workers were aware of universal precaution measures but due to lack of regular supply and proper management they are not able to use these for their protection and the same for their clients. According to them Hepatitis B vaccination should be provided to all Health Workers.

b. *Focus group discussion with community People and Clients*

Focus group discussion with Clients revealed that most of them are aware of the Health Care Waste and its Health Hazards. Most of them said that the management of Health Care Waste is necessary in Health Facilities. Still most of the community people usually don't interact with the Health Workers about HCWM for a positions change.

Most of the Clients said that though they have not seen the Health Care Waste outside the Hospital premises, the management within the Health Facility is somewhat satisfactory but need to be further improved. Regarding management of Health Care Waste, most of the clients said that they do not discuss the matter with the Health Workers or other person in the Health Facility. This shows that there is a need of strengthening Health Facility Management Committee and aware community people to make them more responsible for HCWM as a part of total management of the Health Institutions.

7. CONCLUSION & RECOMMENDATION

7.1 CONCLUSION

- Most of the Health Workers and Waste Handlers are aware of Health Care Waste generated from Health Facilities;
- Most of the Health Workers and Waste Handlers are also aware of Medical Waste and its hazards;
- Most of the Health Workers possess knowledge of segregation of Waste at source;
- Most of the Health Workers are aware of universal precaution measures for infection prevention;
- Practice of using separate dust bins with color specification is not in place in most of the Health Institutions;
- Most of the Health Workers do not have adequate knowledge about the total process of Health Care Waste Management right from segregation at source;
- Use of IP measures in Health Facility is not found satisfactory;
- Use of puncture proof containers with cover and foot pedal is in use only in less than half Health Facilities visited;
- Practice of use of safety box for collecting needle and syringe is usual in Health Facilities;
- Use of land pit is the preferred method for HCW disposal in most of the Health Facilities;
- Incineration as a method of Waste Disposal is used only in nominal Health Facilities, further most of them use it occasionally;
- Less Health Workers are trained for Health Care Waste Management;
- Less Waste Handlers are trained for Health Care Waste Management;
- Less Waste Handlers are trained to handle incinerator;
- Use of Placenta pit is minimum in Health Facilities;

- Community people are aware of health care waste and its hazards, but still they are not proactive and need to be involved in the management of HCW.

7.2 RECOMMENDATIONS

1. Health Care Waste Management policy, rules, regulations and operational guidelines should be in place;

2. There is a need to establish Waste Management unit in large Health Institutions and allocate focal person in all Health Institutions;

3. Managers, Health Workers and Waste Handlers should be made aware of the importance of Health Care Waste Management as a part of total management;

4. Health Workers and Waste Handlers need to be provided with behavior change communication package regarding Health Care Waste Management;

5. Health Education regarding Health Care Waste Management should be provided to community people focusing on their active participation in this matter;

6. There should be specific guidelines and operational plans for segregation, collection, transportation and disposal of waste at every category of Health Facility;

7. A workable Guideline should be in place to regulate Health Care Waste Management in public and Private Health Facilities as well;

8. Health Facility Management Committee should be oriented about different aspects of Health Care Waste Management for their involvement in this matter;

9. Orientation should be given to the H Ws for the use of placenta pit and incinerator for its proper management;

10. Waste Handlers need to be given over all Health Care Waste Management Training including practical training to operate incinerator;

11. Use of protective measures should be made compulsory during HC Waste handling in all Health Facilities;

12. Need of incinerator and the level of Health Facility should be decided on a scientific basis;

13. There is a need for proper coordination of HFs with Municipality and VDC for waste disposal;

14. There should be a central coordinating mechanism for common Waste disposal system e.g. common Incinerator or common Autoclaving System;

15. Adequate budget should be allocated for Health Care Waste Management in Health Facilities;

16. Supplies up to periphery level Health Institutions related to waste management including colorful buckets, bins commodities for infection prevention such as Utility Gloves, Gown, Cap, Boot, and Gaggles etc. for HCW Management should be supplied regularly to segregate HCW at source;

17. Maintenance and reconstruction of incinerator and placenta pit should be done on a regular basis and as per need;

18. Construction of placenta pit for the disposal of placenta in the institution with delivery facility;

19. Proper and regular supervision and monitoring for HCW Management should be strengthened;

20. There should be established recording and reporting system.

Annex-1

Work Plan of Waste Management survey

Activities	Months			Remarks
	October	November	December	
Proposal writing	1-6			
Submission of proposal	6			
Pre-test of questionnaire	7-9			
Finalize the questionnaire	9			
Selection of the survey site	9			
Training/orientation of enumerator	Before data collection			
Data Entry and processing	Upto 21 Dec			
Report writing			22 - - 30	
Report submission			31	

List of Health Institutions selected for the assessment of Health care waste management

SN	Name of District	SHP	HP	PHC	Govt. Hospital	Pvt. Hospital, Nursing Home	Polyclinics, Lab	Medical shop
1	Dadeldhura (12-17 Nov,2007)	1. Sirsha 2. Alital 3. Koteli 4. Samajee	1. Manilekh 2. Navdurga 3. Sashrling	1. Jogbuda	1. District Hospital, Dadeldhura	1. Community (Team) Hospital, Dadeldhura		1. Sharma Medical 2. Grace Medical
2	Kailali 10-17 Oct, 2007	1. Baliya	1. Dododhara 2. Munuwa	1. Chaumala	1. Seti Zonal hospital 2. Tikapur Hospital 3. Institutional Clinic (SZH)	1. Padma Atariya 2. Marie Stopes Center 3. Navjievan Hospital	1. Lalratna	1. Saroj Medical 2. Rasmi Medical 3. Chandimai, Tikapur
3	Bardiya 12-17 Nov, 2007	1.Tapara 2. Kalika 3. Taratal	1. Sanushree 2. Nayagaun 3. Khairichandanpur 4. Newlapur	1. Rajapur	1. District Hospital, Bardia			1. Yogi Medical hall 2.Bhandari Medical hall Rajapur 3. Subha laxmi Medical hall, Tapara
4	Banke 5-10 Dec, 2007	1. Kamdi 2.KhajuraKudra 3. Manikapur 4. Kohalpur	1. Phattepur 2. Samserjung	1. Khajura 2. Bankutwa	1. Bheri zonal Hospital 2. Institutional Clinic	1. Manipal Medical College Kohalpur 2. Medical College, Nepalgunj 3. Western Hospital 4. Tripura Bal Hospital		
5	Sindhupalchowk 16-21 Dec, 2007	1. Irkhu 2. Syaule 3. Sirubari 4. Kubhinde	1. Tatopani 2. Dandapakhar 3. Liasnkhu 4. Selang 5. Bhimtar 6. Banskharka 7. Sindhukot 8. Navalpur	1. Barabise 2. Jalbire 3. Malamchi	1. District Hospital Chautara			1.Paryas Pharma 2. New Bandevi

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SN	Name of District	SHP	HP	PHC	Govt. Hospital	Pvt. Hospital, Nursing Home	Polyclinics, Lab	Medical shop
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2	Kailali 10-17 Oct, 2007	1. Baliya	1. Dododhara 2. Munuwa	1. Chaumala	1. Seti Zonal hospital 2. Tikapur Hospital 3. Institutional Clinic (SZH)	1. Padma Atariya 2. Marie Stopes Center 3. Navjievan Hospital	1. Lalratna	1. Saroj Medical 2. Rasmi Medical 3. Chandimai, Tikapur
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5	Sindhupalchowk 16-21 Dec, 2007	1. Irkhu 2. Syaule 3. Sirubari 4. Kubhinde	1. Tatopani 2. Dandapakhar 3. Liasnkhu 4. Selang 5. Bhimtar 6. Banskharka 7. Sindhukot 8. Navalpur	1. Barabise 2. Jalbire 3. Malamchi	1. District Hospital Chautara			1.Paryas Pharma 2. New Bandevi

Annex-3.1

Assessment of Health Care Waste Management in different Health Facilities by Management Division DoHS FY 2064/2065

Name of the respondent: _____ **Designation:** _____

Name of the Health Institution: _____

Status of Health Institution: ☐ **Hospital** ☐ **PHC** ☐ **HP** ☐ **SHP**

☐ **Private Hospital** ☐ **Nursing Home**

Average OPD visit per day: [ ] Bed Occupancy Rate: [ ]

1) What do you mean by Health Care Waste?

_____.

Note for enumerator: Health care waste is produced from the Health facilities during following activities:

- **a Promotive activities**
- **b Preventive activities**
- **c Curative activities**
- **d Patient examination**
- **e Investigation**

2) What type of Health care waste is produced in your Health institution?

a General waste
b Medical waste
c Both
d Don't know

3) Is there any difference between Medical and general waste?

☐ Yes ☐ No

If yes, mention the differences .....

.....

4) Do you know the consequences of hazardous waste?

☐ Yes ☐ No

If yes, what are they?

a. Transmission of Infection
b. Environmental pollution
c. Epidemic
d. Injury
e. Other (specify):

5) Is there repeated injuries due to sharp and needles.

☐ Yes ☐ No

If yes, what precautions are taken .....

6) Had you have any training regarding HCWM ?

☐ Yes ☐ No

7) Who are affected by Health care waste hazards?

a. Health providers
b. Consumers
c Community people
d. All of above
e. None

8) Who is responsible for Health care waste Management in your Health institution?
   a. In charge (*trained in HCWM / not trained*)
   b. Sub ordinate staff (paramedics) (trained *in HCWM / not trained*)
   c. Peon *(trained in HCWM / not trained*)
   d. Others (specify) ..... (Trained *in HCWM / not trained*)

9) Is there segregation of Health Care waste at source?
   ☐ Yes ☐ No
   If yes, is it as per colour coding?

10) What is the process of Health Care Waste management? (May be more than one choices)
   a. Recycling: ☐ Surgical Instruments ☐ Glass Bottle of I/V ☐ Paper/Package ☐ General plastic product
   b. minimization and segregation
   c. Storage
   d. Collection
   e. Disposal
   f. Public education

11) What are the methods of Health Care Waste disposal? (May be more than one choices)
   a. Open burning
   b. Use of land pit
   c. Incineration

d. disinfection & throw (for sharps)
e. Other (specify): .....

12) Which organization is responsible for Health Care waste management?
   a. Municipality
   b. Health facility itself
   c. Government
   d. All of the above
   e. Non of the above

13) What is nosocomial Infection?
   a. Infection transmitted during HF visit
   b. Infection transmitted through water, air etc
   c. Infection transmitted through community people

d. Other (specify)

14) What type of protective measures do you use while handling waste? (may be more than one answer)
   a. Full sleeve Gown
   b. Utility Gloves.
   c. Gumboot
   d. Head over cap
   e. Mask/ eye protection glass
   f. Others (specify) .....

15) Where do you put the used syringe and needle?
   a. Safety box
   b. Bucket
   c. Cartoon
   d. Others (Specify)
   Use Observation Checklist No. 10

16) How do you dispose sharp health care waste in your health facility?
   a. Safe container
   b Bucket
   c. C artoon
   d. Decontamination
   e. O thers (Specify)

17) Is there puncture proof container with cover and foot pedal at source (For sharp Health Care waste)?
   ☐ Yes ☐ No
   If yes, *Use Observation Checklist No. 10*

18) Is there toilet/s in the health institution?
   ☐ Yes ☐ No
   If yes, *Use Observation Checklist No. 13*

19) Do you use pit for waste disposal?
   ☐ Yes ☐ No
   If yes, observe the condition of pit
   ☐ Good ☐ Satisfactory ☐ Worst

20) Is there placenta pit in your Health Facility?
   ☐ Yes ☐ No
   If yes, *Use Observation Checklist No.9*

21) Is there incinerator in Health Institution?
   ☐ Yes ☐ No
   If yes, *(observe the condition) Use Observation Checklist No. 7*

22) Where the base ash is disposed product of Incinerator?
   a. Pit/burial
   b. Use as fertilizer in garden?
   c. Left in open field
   d. Others (specify)

23) Do you have budget of management for Health Care waste?
   ☐ Yes ☐ No

If yes, what is the source?

a. Government
b. Health facility Management committee.
c Community base organization
d. Others (specify)

24) Is there any other operational problem in Health Care waste Management?

a. Lack of budget
b. Lack of commodities
c. M anagement problem
d. Others (specify)
e. O thers

25) Do you have any suggestion/ recommendation for HCWM ?

1. _____
2. _____
3. _____
4. _____

Annex-3.2

Assessment of Health Care Waste Management in different Health Facilities by Management Division DoHS FY 2064/2065

Questionnaire for Health Care waste Handlers

Name of waste handler:

Post:

1. What are the Types of Health Care waste?

   _____

   _____

2. Do you segregate the waste before collection or disposal?

   ☐ Yes ☐ No

3. What are the methods of your waste disposal in this Health facility?

4. Is there any separate place for HCW Disposal in H.I.?

   ☐ Yes ☐ No

   If yes, where _____

5. Do you have skill to handle Incinerator? (if there is)

   ☐ Yes ☐ No

6. Had you have any training regarding Health Care Waste Management?

   ☐ Yes ☐ No

7. Do you perceive any Health effect due to waste handling?

   ☐ Yes ☐ No

8. What is you requirement regarding Health Care waste management?

   1.....

   2.....

   3.....

Annex-3.3

Assessment of Health Care Waste Management in different HFs FY 2064-65

Clients Satisfaction Questionnaire

Name of Respondent: **Health Facility:**

Educational Status: A. Illiterate B. Primary C. High School D. Intermediate E. Bachelor and Above

1. Do you have any idea about waste?
2. Is it necessary to manage waste?

☐ Yes ☐ No

If yes, why?.....

3. In your opinion who is responsible for Health Care Waste Management?

a. Municipality b. Health workers

c. Clients d. Community it's self

e. Other (Specify)

4. Is there any difference between H.C.W. and general waste?

_____

_____

5. Should there be different management of waste from home & HF? Why?

_____

_____

6. What is your perception about waste management at health institution?

a. clean b. satisfactory c. not satisfactory d. Worse

7. Do you know that health care waste is hazardous to health?

a yes b. No

c. Don't know

8. Is there open disposal of Health Care waste out side the Health Facilities premises?

a Always b. Mostly

c. Sometime

Do you interact with Health Person about Health care Waste Management as you visit health facility?

a. Yes b No

If yes, when you interacted last time

10. Any suggestion for Health Care Waste Management .....

Annex-3.4

Assessment of Health Care Waste Management in different HFs FY 2064-65

OBSERVATION CHECKLIST

Name of health Institution:_____ **Date:**____/__

1. **Mid level health staff are aware of universal precaution concerning health care waste** ***(discuss with health staff in the facility)***
   a) Yes [ ] b) No [ ] c) N/A [ ]

   [Note for the enumerators: Universal precaution .....]
2. **General cleanliness of health institution**
   a) Very good [ ] b) good [ ] c) Satisfactory [ ] d) worst [ ]
3. **Use of dustbins in health institution**
   a) Yes [ ] b) No [ ]
4. **If yes: use of separate dust bins for different types of waste (segregation)**
   a) Yes [ ] b) No [ ]

   [Note for the enumerators:..... types of waste]
5. **Is there incinerator in the health institution?**
   a) Yes [ ] b) No [ ]
6. **Type of incinerator** *(specify)*

   a. _____ b. _____

   c. _____ d. _____

   [Note for the enumerators:..... types of incinerator]
7. **Incinerator in use**
   a) Yes [ ] b) No [ ] c) N/A [ ]
8. **If pit is used for health care waste disposal, what is its condition?**
   a) Very good [ ] b) good [ ] c) Satisfactory [ ] d) worst [ ]
9. **Placenta pit in use**
   a) Yes [ ] b) No [ ]
10. **Safety box is being used**
    a) Yes [ ] b) No [ ] c) N/A [ ]
11. **Infection prevention measures being used?**
    a) Yes [ ] b) No [ ] c) don't know [
12.]12.**Type of infection prevention measures being used?**
    a) Mask [ ] b) Utility Glove [ ] c) Gown [ ]
    d) Boot [ ] e) Spectacles [ ]
13. **Is there toilet/s in use within health facility premises?**
    a) Yes [ ] b) No [ ]
14. **If yes**
    a) clean [ ] b) satisfactory [ ] c) Dirty [ ] d) Worst [ ]

Annex-3.5

Focus Group Discussion Guideline

संचालन कर्ता :- १ जना

Rapourter :- १ जना

FGD गर्ने स्थान :- स्वास्थ्य संस्था

समय :- १.०० देखि १.३० घण्टा

आवश्यक सामाग्री :- FGD Guideline, कलम, कापी

तरीका :-

१. सर्वप्रथम संचालनकर्ता वाट स्वागत तथा एक अर्कामा परिचय ।

२. FGD गर्नुको उद्देश्य निम्न अनुसारका वताउने ।

- स्वास्थ्य संस्थामा फोहोर व्यवस्थापन प्रक्रिया कस्तो छ यसलाई अझ व्यवस्थित गर्नु पर्छ कि पर्दैन भनि सूचना संकलन गर्ने ।
- फोहोर व्यवस्थापनका सन्दर्भमा हाल गर्ने गरेका कार्यहरु र सो गर्दा आइपरेका बाधा व्यवधान तथा समाधानका उपायहरु पत्ता लगाउने ।
- फोहोर व्यवस्थापनका लागि आवश्यक कुराहरुको सूचिकरण गर्ने ।

३. FGD संचालन गर्दा सदस्यवाट अवलम्वन गर्नु पर्ने नियमहरुको विषयमा प्रकाश

पार्ने ।

- प्रस्तुत विषय वस्तुमा आ-आफ्ना विचार राख्न सवैका लागि वातावरण सिर्जना गर्ने ।
- एक जना वोल्दा अरुले धैर्य पूर्वक सुन्ने ।
- एक सदस्यको विचार अर्काले नकारात्मक रुपमा खण्डन गर्ने अवस्थाको श्रृजना नगर्न अनुरोध गर्दै सकारात्मक छलफल गर्न सवैलाई संलग्न गराउने ।
- प्रस्तुत विषयमा समुहको एउटै विचार वनाउन छलफल केन्द्रित गराउने र सहमति द्वारा एउटा निश्कर्ष निकाल्न कोशिश गर्ने ।
- प्रस्तुत विषय माथि गरिएको छलफलको निश्कर्ष टिपोट गर्ने ।

Annex-4

Selected districts with total number of Health Institutions

SN	District	Hospitals	PHCC/HC	Health Post	Sub Health Post	Total
1	Illam	1	4	6	38	50
2	Jhapa	1	6	6	38	51
3	Solukhumbu	1	2	9	23	35
4	Bhaktapur	1	2	7	12	22
5	Lalitpur	2	4	9	29	44
6	Sindhupalchowk	1	3	10	65	79
7	Palpa	2	3	9	53	68
8	Rupandehi	2	5	6	58	71
9	Banke	1	3	9	35	48
10	Bardiya	1	3	8	22	33
11	Kailali	2	5	7	31	45
12	Dadeldhura	1	1	9	15	26
Total		**16**	**41**	**95**	**419**	**572**

Annex-5

Snap shots of field visit during HCWM Assessment

Supervisory visit of Motipur PHC, Rupandehi

Supervisory visit at Dhagdehi PHC, Rupandehi

Annex-6

List of Health Institutions having Incinerator

SN	Health Facility	Type	Condition	Remarks
1	District Hospital Palpa			Not in use
2	Tansen Mission Hospital	Simple, wooden		In use
3	Nepalgunj Medical College Kohalpur	Small size	Not sufficient	In use
4	Ne.Ga.T.B. Referral Centre	Aluminum bounded-roof, pipe		In use
5	Shamsergunj Health Post Banke		Very poor	Not in use
6	Bankatawa PHC	Simple burn using fire	Need maintenance	Not in use
7	Khajura PHC	Cemented - 5 ft height		In use
8	Kamdi SHP, Banke	Bricks used		In use
9	Kohalpur SHP, Banke			Not in use
10	Mechi Hospital			In use
11	Chandragadhi HP			In use
12	Dhulabari PHC			In use
13	Dhaijan SHP			In use
14	District Health Office Dadeldhura			Not in use
15	Team Hospital Dadeldhura	Simple chimney		Not in use
16	Bheri Zonal Hospital, Nepalgunj			In use
17	Jogbuda PHC	Cemented		In use
18	Lumbini Zonal Hospital	400 -1200 cm - all burnable		In use
19	Lumbini Nursing Home, Rupandehi	Simple		Not in use
20	Health Care Nursing Home, Butwal	Simple		In use
21	Shiddhartha Child and Women Hospital, Rupandehi			Not in use
22	Motipur PHC, Rupandehi	Simple	Far from HF	Not in use
23	Siddhi Memorial Hospital, Bhaktapur			In use
24	Dr. Iwamura Hospital, Bhaktapur			In use
25	Bhaktapur Hospital	Small Electric	Not sufficient	In use
26	Bode HP	Simple		In use
27	Alka Hospital Pvt. Ltd. Lalitpur	Small size		Not in use
28	Patan Hospital Lalitpur	Cemented, well organised		In use

SN	Health Facility	Type	Condition	Remarks
29	Thecho HP, Lalitpur	Cemented		In use
30	B&B Hospital Lalitpur			In use
31	Chapagaun PHC, Lalitpur			In use
32	Aanandaban Hospital, Lalitpur			In use
33	Tapara SHP, Bardiya		Need maintenance	Not in use
34	Kerug SHP, Solukhumbu	Rounded, cemented plaster		In use
35	Beni HP, Iding, Solukhumbu	Round and big size		In use
36	Dododhara HP, Kailali	Cemented		In use
37	Tikapur Hospital, Kailali		Need maintenance	In use
38	Munuwa HP, Kailali	Not in use, need of maintenance	Need maintenance	Not in use
39	Lalratna Hospital Pvt. Ltd, Lamki, Kailali	No roof, made using bricks	Not completed	Not in use
40	Baliya SHP, Kailali		Need maintenance	Not in use
41	Chaumala PHC, Kailali		Need maintenance	Not in use
42	Seti Zonal Hospital			In use
43	Marie Stopes, Attariya, Kailali	Drum is used	Unorganized	Not in use
44	Sanoshree HP, Bardiya	Burning		Not in use
45	Taratal SHP, Bardiya	Burning		Not in use
46	District Hospital, Bardiya	Waste burnable		Not in use
47	Neulapur HP, Bardiya		Not working	Not in use
48	Nayagaun HP, Bardiya	Cemented		In use
49	Khairichandanpur HP, Bardiya	Cemented		In use
50	UCMS, Teaching Hospital Rupandehi	Small size, cemented	Not in use	Not in use
51	Bhim Hospital, Rupandehi	Simple	Not sufficient	In use
52	Ilam Hospital, Ilam	Cemented	Far from HF	Not in use

List of Resource Persons from DoHS

1. Dr. Gobindha Prashade Ojha - Director Genoral - Department of Health Service
2. Dr. Sambhu Sharan Tiwari – Director – Managmet Division
3. Ms. Rita Bhandari Joshi – PHA – Management Division
4. Mr. Ghanashyam Pokharel – PHA – Management Division
5. Mr. Hem Kala Lama – PHNA – Management Division
6. Mr. Lakshmi Raj Joshi – Sr. HEdO – NHEICC
7. Mr. Kedar Raj Parajuli – Sr. PHO – Management Division
8. Mr. Giri Raj Subedhi – Sr.PHO- MOH&P
9. Ms. Jaya Laxmi Shakya – Sr.PHN – Management Division
10. Mr. Shambhu Gyawali – PHO – Mangement Division