

# CHAPTER I

## INTRODUCTION

### 1.1 Background

During the process of providing health care and eliminating potential risks to people's health, health care services produce wastes that may themselves be hazardous to health. Wastes refer to remains or by products of human production and consumption processes. Wastes from health facilities carry a higher potential for infection and injury than any other type of wastes. (WHO 1999). Hazardous waste refers to any waste that could pose a threat to human health and the environment if managed improperly. The Basel convention on the control of trans boundary movement of hazardous wastes and their disposal classified hazardous wastes into 10 types (Y1-Y10). Y1 is clinical waste from medical care in hospital, medical centers and clinics. Y3 is waste from pharmaceuticals, drugs and medicine. Risks linked to infectious health care wastes are 22-53% for hepatitis B cases, 31-59% for hepatitis C cases, and 7-24% for HIV/AIDS. Faeces and vomitus can spread gastro-enteric infections and viral hepatitis A. Saliva and other human fluids could cause respiratory infections (WHR 2002, in SEAR). People at risks from health care waste are *Doctors, Nurses, Auxiliary staff, Laboratory technicians, Patients, Sanitary personnel, Waste handlers, Scavengers and recyclers.*

Serious public health consequences and significant negative impact on the environment could result from inadequate and inappropriate handling of health care wastes. Sewage from field hospitals treating cholera patients has been implicated in cholera epidemics in some Latin American countries. A hospital housekeeper in the United States of America developed staphylococcal bacteremia and endocarditis after needle stick injury while handling health care wastes. Two of the eight cases of occupational HIV infections in France in 1992 occurred in waste handlers through wounds. CDC recognizes 51 cases of HIV in USA in 1996 as occupational (WHO, 1999).

There are serious public health risks from the reused syringes: Worldwide an estimated 12,000 million injections are performed yearly with one billion for immunization. Unsafe disposal and reuse of contaminated needles and syringes cause 10 to 12 million infections. 8-16 million cases of hepatitis B (133 in 100,000 persons), 3-4.7 millions cases of hepatitis C (39 in 100,000 persons) and 80,000 to 160,000 cases of HIV/AIDS (1.3 in 100,000 persons), are believed to be caused by reuse of needles and syringes, (Kane et al, WHO Bulletin pp 801-807, 1999).

Although the management of hazardous hospital wastes has become a serious concern in South-East Asian Region, few governments in the region have provided guidelines for proper waste management (WHO SEA-EH-53, 1999). This is evident from the national news of the region. For example Unmanaged hospital wastes may trigger epidemic in the capital (The Kathmandu Post 13<sup>th</sup> November 2001) and

biomedical wastes in the city could spread deadly diseases including HIV (The New Nation, 7<sup>th</sup> September 2003, Dhaka) are few examples from many in the region.

### **National situation**

As of the 1980's there has been a rapid expansion of the health infrastructure in Bhutan. Basic health units (BHU's) were established in the 1970's. The primary health care approach was formally adopted in the country in 1979 in accordance with the Alma Ata Declaration in 1978. In line with this, the country is committed to establishing a cost effective and efficient health care delivery system based on primary health care that effectively delivers health care services to all people. The mountainous terrain, limited communication infrastructure and the low density of population raise the cost of infrastructure and health care delivery. Thereby, the Bhutanese national health care delivery system is characterized by the central level being responsible for administration, training and major referrals, and the district level (Dzongkhags) managing the delivery of basic services to the population through network of district hospitals, BHU's and outreach clinics (ORCs).

Bhutan's 29 hospitals and 163 BHU's are spread across the country catering health service to an estimated population of 6, 58,000. In the year 2001 these health facilities provided curative, promotive, preventive and rehabilitative health care to 7,54,214 out-patients and 32,367 in-patients. The national referral hospital is the only hospital in the country with medical specialty facilities providing care to approximately 30% of the out patients and 26% of in-patients of the total patients in the country,(Department of health services, annual health bulletin, 2001). All the peripheral

health facilities across the country refer their patients to the national referral hospital. This hospital sets the standards of patient care and other services.

An important source of hazardous waste for a primarily agricultural subsistence economy like Bhutan is from health care services. As stated in the ninth five-year plan of the Royal government, occupational health and safety standards are generally low or non-existent. (9<sup>th</sup> plan document. Royal government of Bhutan). There are guidelines through code of practices for hazardous waste management but with limited references to hospital waste. ( NEC. Middle path). As such, the management of hospital wastes in general and infectious wastes in particular are not up to international norms and standard in all the health facilities across the country. The specialists from the national referral hospital visiting the district hospital have always highlighted problem of infectious waste management in the district hospitals in their tour reports. (Specialists tour reports). Bhutan's hepatitis B prevalence rate is 5% (health department, 1996) and the estimated number of people living with HIV/AIDS as of 2003 is 240 (according to UNAIDS) while cases known so far is only 42. The infectious wastes from the national referral hospital are often seen in the municipality dustbins and sometimes these even litter the streets with blood soaked swabs, used needles and syringes, anatomical body parts and empty blood bags. There are possibilities that the waste handlers, recyclers and school children will get multitude of diseases from the untreated infectious waste of the hospital present in the municipality bins. The aim of the national referral hospital is to provide quality health care free of charge to the people of Bhutan. The quantity of infectious wastes generated is expected to increase as the number of patients' increase and increasing use of disposable equipment with technological advancement. The

vision of the national referral hospital is to develop into a super specialized center to cater to the needs of the Bhutanese patients. Therefore the researcher is of the view that a study of the infectious waste management by the health care workers of this hospital will enable one to understand hazardous waste management in the health sector and to make contributions to occupational health and safety standards for health care services.

## **1.2 Research Question**

- 1.2.1 What is the level of knowledge, attitude, and behavior of health workers in the proper management of infectious waste?
- 1.2.2 Does the behavior of professional and auxiliary health workers differ in proper management of infectious waste?
- 1.2.3 What are the recommendations from the health care workers for proper management of infectious waste?

## **1.3 Objective of the Study**

### **1.3.1 General objective**

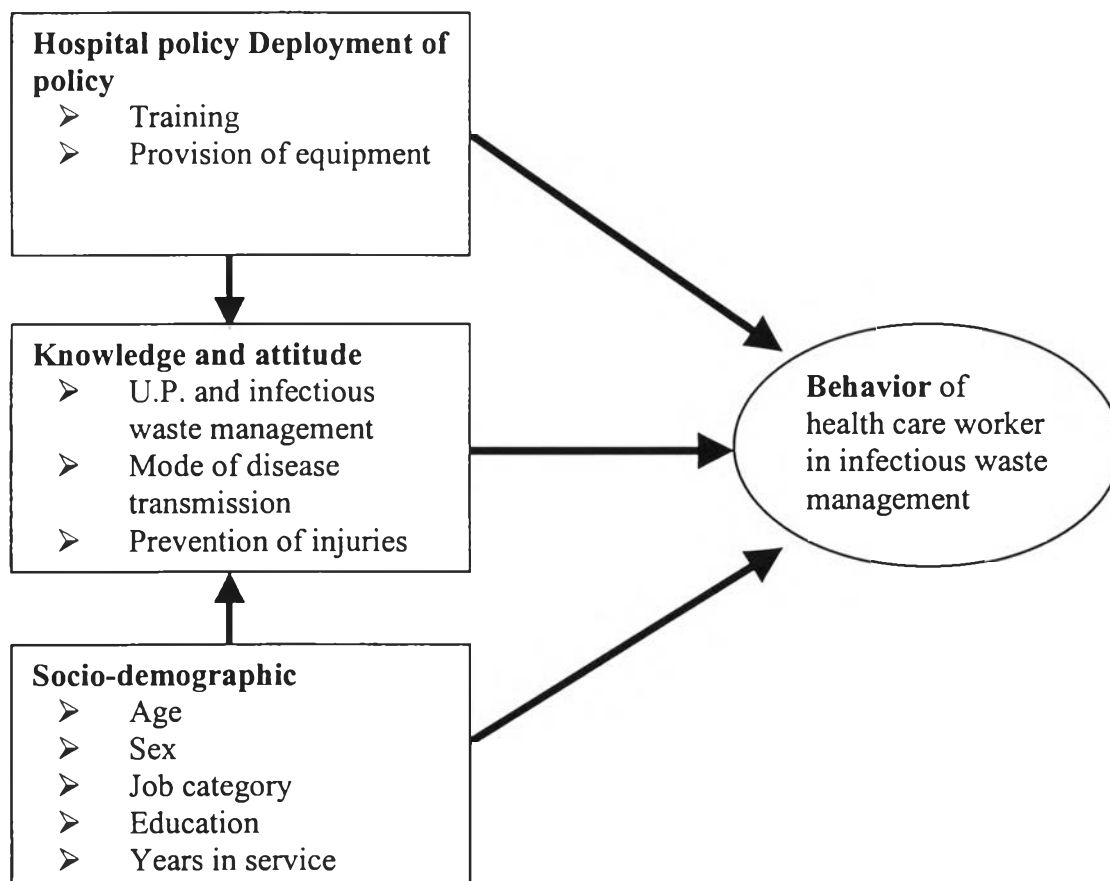
To assess the behavior and factors relating to it, among health care workers in proper management of the infectious waste at national referral hospital, Thimphu, Bhutan.

### **1.3.2 Specific objectives**

- i. To assess the behavior of doctors, nurses, technicians and auxiliary staff in infectious waste management at the national referral hospital.

- ii. To assess the knowledge and attitude of doctors, nurses, technicians and auxiliary staff in infectious waste management.
- iii. To study the association between behavior in infectious waste management and the following knowledge, attitude, age, sex, education, number of years in service, job category and waste management training.
- iv. To compare the behavior of auxiliary and professional health workers in infectious waste management.
- v. To find out for any recommendations for proper management of infectious wastes from the health care workers at the national referral hospital.
- vi. To describe the policy and policy deployment of the hospital on the infectious waste management.

## 1.4 Conceptual Framework



**Figure 1 : Factors affecting behavior of health care workers in infectious waste management**

## 1.5 Scope of the Study

The study aims at studying behavior and factors relating to it, among health care workers in infectious waste management.

## **1.6 Variables Employed in the Study**

### **1.6.1 Independent variables**

Independent variable: socio-demographic factors like age, sex, job category, education level, waste management training and number of years in service and knowledge and attitude in infectious waste management, mode of disease transmission and prevention of injuries at work place and hospital policy, deployment of policy and recommendations.

### **1.6.2. Dependent variable**

Behavior of health care workers in the proper management of infectious wastes.

**1.7 Key words :** Infectious waste, health care workers, Professionals, Auxiliary staff and proper management of infectious waste.

## **1.8 Operational Definitions of Terms Used in the Study**

Infectious wastes refer to a part of health care waste that is suspected to contain pathogens (bacteria, viruses, parasites, or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts. This includes laboratory cultures, wastes from wards, tissue (swabs), materials or equipment that have been in contact with infected patients, and sharps.

Health care workers means all those people involved in patient care. It includes doctors, dentists, nurses, pharmacists and technicians (laboratory, dental, eye, O.T. and x-ray) and auxiliary staff.



Professional health care workers means those people directly involved in patient care. It includes doctors, dentists, nurses and technicians.

Auxiliary staff means all those people involved in patient care but not directly. They normally assist in patient transport or responsible for hygiene of the wards and are also responsible for collection and transport of wastes e.g. ward boys and sweepers.

Knowledge of health care workers refers to understanding about universal precaution and the hazards, types, segregation, collection, transport, storage and treatment of the infectious wastes.

Attitude of health care workers refers to feelings and views expressed in agreement or objection to written texts or situations on universal precaution and hazards, segregation, collection, transportation, storage and treatment of infectious wastes.

Behavior of health care workers refers to the act of practice in universal precaution and segregation, collection, transport, storage and treatment of the infectious wastes.

Hospital's policy on infectious waste management means the management principles and plan in writing, signed by the head of the hospital. It describes all levels of responsibility, from the highest administrative authority to the lowest staff member.

It contains the waste management plan with technical guidelines and made available to all employees in the hospital.

Policy deployment in infectious waste management means implementation of the policy. In this case it is existence of waste management committee responsible for coordination, conduct trainings, incident investigations, meetings, review activity reports, interaction with local public health officials and environmental officials, and provisions of facilities and equipment necessary for management of infectious wastes.

Recommendations mean anything that facilitates the practice of proper management of infectious wastes.