



**EFFECT OF HEALTH AWARENESS INTERVENTIONS ON  
KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTH  
PROVIDERS AND WORKERS INVOLVED IN HEALTH CARE WASTE  
ASPECTS AT KHARTOUM NORTH TEACHING HOSPITAL.**

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### **ABSTRACT**

Health care waste can cause immediate short term public health problem as well as long term environmental pollution if not properly managed. Health care waste constitutes major health hazards to the handlers, particularly hepatitis B and human immune-deficiency virus as well as environmental pollution. The study aimed to assess the

health practices and raise awareness of staff towards health care waste management, to train health staff to protect themselves from the hazards of and to improve methods of management in Khartoum North Teaching Hospital. A sample size of 384-targeted staff, including, physicians, nurses, medical assistants, technicians and workers were included in the study. The intervention includes; training of junior staff, group discussions for planners and decision makers, audiovisual aids, regular meeting for the responsible person and committee. Data were collected before and after the intervention using standardized structured questionnaire and analyzed using SPSS Program, paired sample T- test and chi square test are used to interprets the significance before and after intervention. The results revealed a remarkable improvement in the knowledge, concept and practices regarding the hazards of. The study concluded that health education intervention has yielded remarkable

improvement in knowledge, attitude and practices of health staff towards management and safety measures during handling. The study recommend the importance of training program for all staff involved in (HCW) management.

**KEYWORDS:** awareness, waste, health education.

## INTRODUCTION

Many different waste streams are generated in the delivery of the health services, the responsible management and disposal of such wastes is an onerous task for healthcare personnel, involving environmental, health and safety considerations.<sup>[1]</sup>

Health care waste (HCW) is defined as the solid or liquid waste arising from healthcare facilities. This waste comprises two fractions, namely risk waste and non-risk waste, includes all the waste generated by health care facilities and research facilities and laboratories.<sup>[2]</sup>

The Sources of (HCW) are major and minor sources. Between 75%-90% is non-risk (general) and between 10%-25% of (HCW) is regarded as hazardous<sup>3</sup>. Health care waste can cause immediate short term public health problem as well as long term environmental pollution if not properly managed, WHO 2005 estimate that over 23million of hepatitis B, C and HIV occur yearly due to unsafe injection practices.<sup>[3]</sup>

Microorganisms are transmitted in health care settings by several routes, and the same microorganism may be transmitted by more than one route, there are five main routes of transmission: contact, droplet, airborne, common vehicle, and vector borne, applied educational interventions encompasses a wide range of activities that aim to bring about and sustain changes in the practice of healthcare workers.<sup>[3]</sup>

One of the major preventive aspects against the hazards of health care waste is that all staff involved in any aspect of packaging, storage and transport of risky healthcare waste should receive standard precaution training that appropriate to their task this may include, hand hygiene, proper use of Personal Protective Equipment (PPE), management of blood and body fluid spillage.<sup>[4]</sup>

The transportation of healthcare waste is governed by several sets of regulations dealing with different concerns relating to the materials transported and every step of the waste management chain is strictly regulated.<sup>[5]</sup>

Waste generators should remember that they have a responsibility to ensure that waste sent offsite is managed in a responsible manner and all healthcare risk waste containers should be traceable to the point of generation.<sup>[6]</sup> The studies in Sudan showed that around 2 k of waste \bed \ day is produced. The total waste generated in health facilities is about 12%, hazardous 85% general non risk waste while a small percentage 3% is labeled as highly hazardous. About 30% of the participants used protective cloths but these protective cloths were not met the require standards so they are not giving the required protection.<sup>[7]</sup> The increasing demand for health care services is accompanied by increasing health care waste production.<sup>[8]</sup> WHO (2005) estimated that health care waste from Khartoum North Teaching Hospital is about 1.928 tones as daily generation. Particularly, there is no a sanitary management system implemented in a scientific way for health care waste in Khartoum Teaching Hospital before the intervention.<sup>[9]</sup>

## MATERIALS AND METHODS

This is an experimental hospital- based study conducted in Khartoum North Teaching Hospital. Khartoum North Teaching Hospital consists of fifteen departments. In the hospital there is no system of segregation, transportation, storage for the hospital waste, sharps scattered in storage area before the intervention. Health personnel in the Hospital about 1204, including; physicians, medical Assistants, matron sisters, specialist technicians, nurses and cleaners. The sample size was 384, was taken proportionally from all the hospital personnel. A stratified sampling technique was used to select the sample size proportionally according to the job of health staff.

It was conducted in three phases; Phase One: Data collection:- Preliminary survey was conducted to assess the knowledge, attitudes and practices of the health staff in Khartoum North Teaching Hospital using different data collection methods as questionnaires, interviews, reports, focus group discussions and observation. Phase two: Intervention: The intervention includes; One day orientation workshop for senior staff, a two day training course for junior staff and workers, focus group discussions, educational methods using lectures and audio visual aids and posters. The intervention continued for six months. Phase

three: Evaluation:- Data that collected before and after the intervention was analyzed using, SPSS version 20 and compared using T test and chi square test.

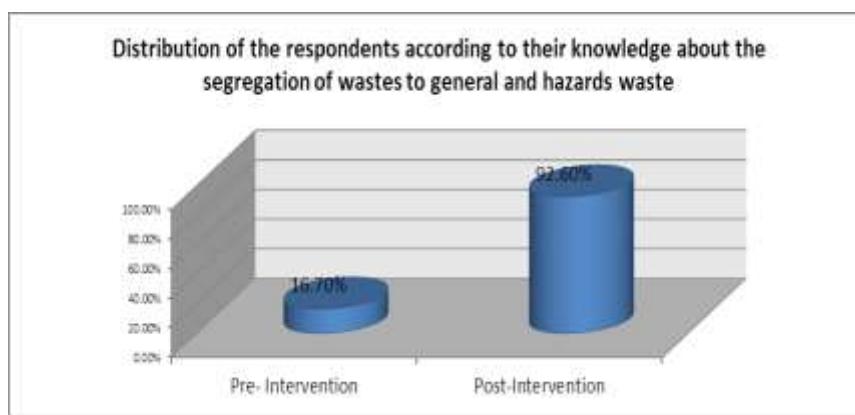
## RESULTS

**Knowledge:** The knowledge of the respondents concerning the hazards of health care waste increased significantly after the intervention from (53.7%) to (98.1%), p value= 0.000 see figure (1), there is a highly significant increase in knowledge concerning the hazard of improper disposal of the syringes after the intervention from (85.3%) to (97.3%), p value=0.00 see figure (2) also the knowledge of the respondents concerning the type of the health hazards of health care waste increased significantly after the intervention from (16.7%) to( 92.6 %) p value=0.13. see figure (3).

**Attitude:** The attitude towards the use of the protective clothes modified positively after the intervention from (45%) to (70%).

**Practice:** The practice of workers concerning touching contaminated cotton and linen with patient body fluids has changed significantly after the intervention from (48.1% to 00. %,) see figure (4), the practice of using protective clothes has changed significantly after the intervention from (46.3%) to (70.4%).There is a highly significant change in practices concerning the exposure of the needle stick injury after the intervention from 48.1% % to 00% %, see figure (5). There is a highly significant increase in immunization of against hepatitis among the workers after the intervention from (11.1%) to (48.1%) see figure(6).

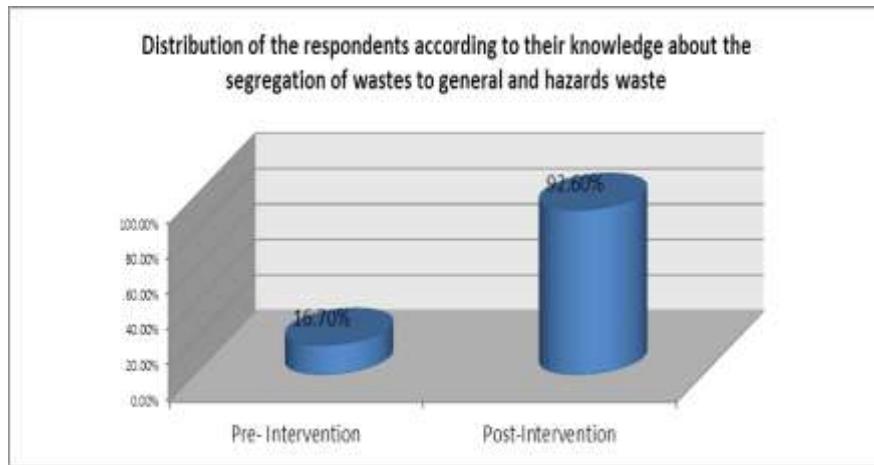
**Incidence Rate:** There is a significant decrease in the number of cases of hepatitis among the workers during working after the intervention from (13% % to 00%).



N=384

**Figure: 1 Distribution of the respondents according to their knowledge about the hazards of health care waste.**

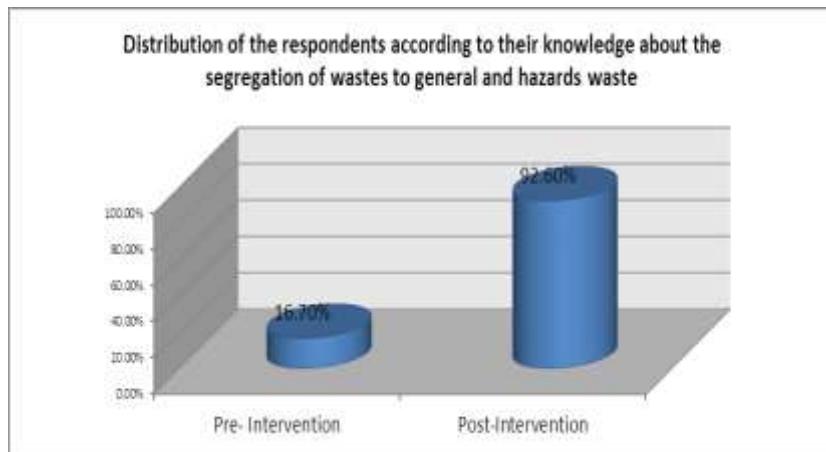
The knowledge of the respondents concerning the hazards of health care waste range increased significantly after the intervention from 53.7% to 98.1%, t. test 2.03 at df=1 p-value=0.00.



N=384

**Figure 2 Distribution of the respondents according to their knowledge about the proper disposal of the syringes after use**

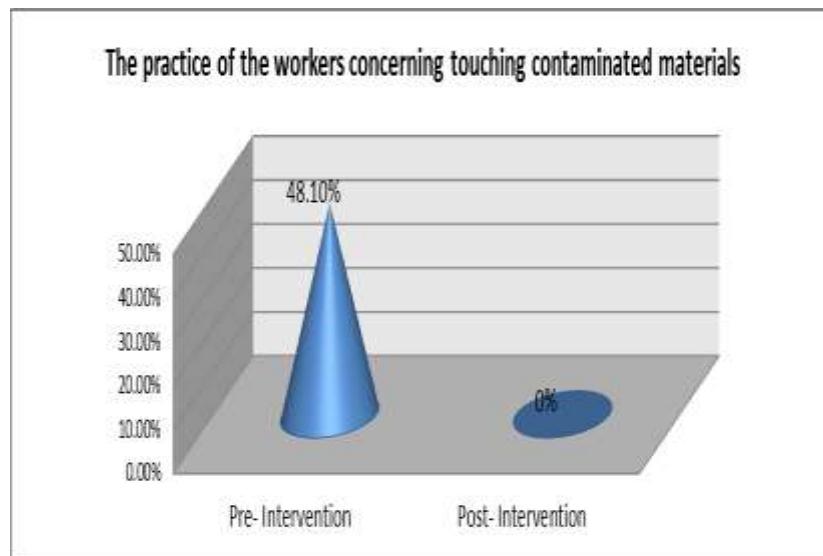
There is a highly significant increase in knowledge concerning the hazard of improper disposal of the syringes after the intervention from 85.3% to 97.3% t. test 43.5 .at df=1 p-value=0.13.



N=384

**Figure 3 Distribution of the respondents according to their knowledge about the segregation of wastes to general and hazards waste**

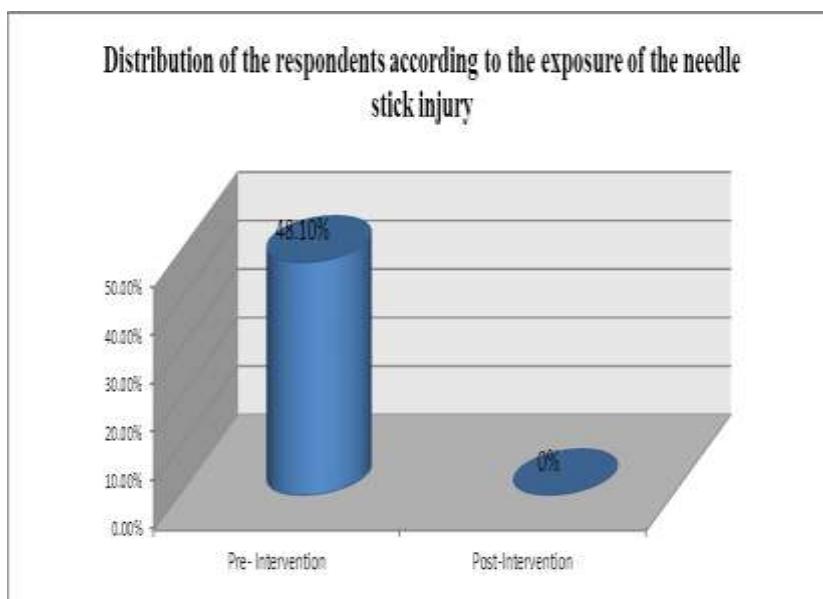
There is a highly significant increase in knowledge concerning the **segregation of** wastes to general and hazardous waste after the intervention from 16.7% % to 92.6% % t. test =12.640 at df=1 p value= 0.000



N=384

**Figure 4 Distribution of the respondents according to their practice of touching contaminated cotton and linen.**

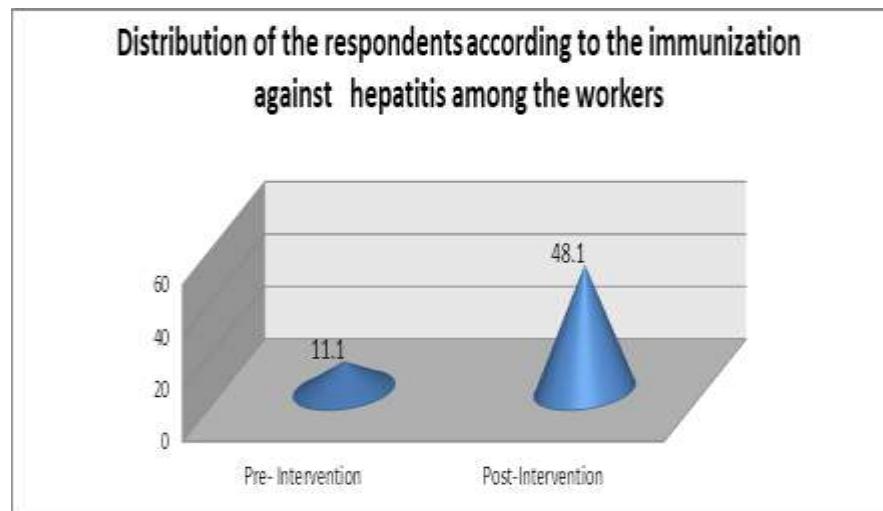
There is a highly significant change in practices concerning the touching contaminated cotton and linen after the intervention from 48.1% % to 00% % t. test =42.3 at df=1 p- value= 0.000.



N=384

**Figure 5 Distribution of the respondents according to the exposure of the needle stick injury**

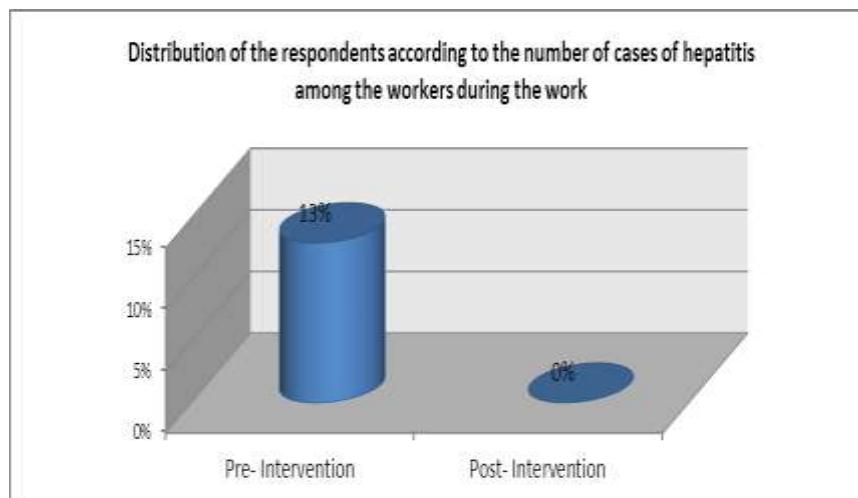
There is a highly significant change in practices concerning the exposure of the needle stick injury after the intervention from 48.1% % to 00% % t. test =7.834. at df=74 p value= 0.000



N=384

**Figure 6: Distribution of the respondents according to the immunization against hepatitis among the workers**

There is a highly significant increase in immunization of against hepatitis among the workers after the intervention from 11.1% % to 48.1% % t. test =4.595 df=1 p- value= 0.000.



**Figure 7: Distribution of the respondents according to the number of cases of hepatitis among the workers during working**

There is a highly significant change in the number of cases of hepatitis among the workers during working after the intervention from 13% % to 00% % t. test =23.1 at df=1 p-value=0.00.

## DISCUSSION

Educational interventions in general healthcare settings has been used to reduce healthcare associated hazards and to cut the chain of the routes of transmission. The workers gained a significant increase in knowledge about hazards of health care wastes, after the intervention, this could to a large extend attributed to the intervention. This result agrees with the study by Ezzadin A.A. Franka (2006)<sup>[4]</sup> in Libya stated that 98.7% of the worker having information about AIDS and viral hepatitis, as health risks of the health care waste.<sup>[6]</sup> The practice of using protective clothes has changed significantly after the intervention from 46.3% to 70.4%. This result agrees with the study conducted by Ahamed, et al (2001)<sup>2</sup> concerning the use of safety precaution , more than 70% mention that they implement infection control procedures and only 15.2 % mention that they are more likely to wear gloves. Most of the wastes (92.6%) were segregated to general and hazardous wastes, into three categories sharps in the safety box, hazardous waste in red bags and the general wastes in the black bags. This result agrees with the study done by Mustafa (2009) in Sudan, where he stated that almost (99.2%) of workers using color coding containers to separate health care waste. The most common form of occupational exposure experienced by health care staff and waste handlers is by pathogens in the blood such as hepatitis B and C and HIV through a needle stick injury. In the study area, about half of the workers had been injured with the disposable syringes and needles. This result agrees with the study that conducted by the National Institute for occupational safety and health in USA, (1999), where they documented about (89%) of occupational HIV among health workers due to percutaneous injuries. the prevalence of HBV infection among the studied hospital personnel ranged from 24 to 43%. The same was reported by Hanaa. A. A Abouzema (2003)<sup>[6]</sup>, he mention that health the prevalence of HBV and HCV among health care waste collectors in Cairo university hospitals about (55%). The health awareness intervention leads to increase the utilization of HB immunization where only (11%) of the workers immunized before the intervention, after the intervention reached to (48%).

## CONCLUSION

the study reported a remarkable improvement in the knowledge, attitudes and practices of the and decrease the rate of needle stick, hepatitis B infection and increase the utilization of HB immunization of the health staff deal with health care waste management at Khartoum North Teaching Hospital. The study recommend establishment of clear and applicable policy and system of (HCW) management to be implemented in all hospitals.

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