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Assessment of knowledge, attitude and practice of medical staff towards medical waste management in Jinja Regional Referral Hospital in Jinja District Uganda

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ABSTRACT

The study was to assess the medical staff's knowledge, attitude and practice towards medical waste management. Also to determine the knowledge of medical staff on medical waste disposal, to evaluate attitudes of medical staff on medical waste disposal and to determine the practice of medical staff on medical waste disposal. The study was of a Cross-sectional type using a questionnaire with closed-ended questions that was availed to respondents. The design helped the researcher to obtain more information in a short time as it took little time to conduct. The study included the population of all medical staff both male and female in Jinja Regional Referral hospital. While undertaking this research, the researcher used questionnaires for data collection. The choice of this method was determined and was interpreted by the nature of data collected, the time available as well as by the objectives of the study. Data were collated, tallied and analyzed with the aid of a Statistical Package for Social Sciences. Descriptive and inferential statistics were used to analyze the data. The results were presented in tables as percentages, means and standard deviation. From the study findings, on the knowledge of medical staff on medical waste disposal, respondents 5% revealed that personal protective equipment must be used routinely when handling medical waste and that rules/Act for Bio Medical Waste Management don't exist, 10% revealed that medical waste includes used, cartoons, papers, and plastics, 8.75% showed that placing medical waste in wrong bin is not high risk. Conclusion: Medical waste management is affected by knowledge, attitude and practice of medical workers. Some of the health care workers had knowledge gap and did not practice health care wastes management. The study recommended that Training programs need to focus on empowering the nursing professionals on biomedical waste management with broad scope and practical knowledge in all aspects. The right practices and other activities of biomedical waste management and its ramifications in the form of avoiding of injuries, importance of vaccinations and following of universal precautions can be achieved when adequately supported by IEC (information, education and communication) strategies like handouts, stickers, charts, celebrations of various days like hand hygiene day and other days can help in improving the practices of the employees of the organizations.

Keywords: Medical staff, Medical waste disposal, Personal protective equipment, Healthcare workers, Biomedical waste management.

INTRODUCTION

Medical waste is waste that is generated by healthcare workers when carrying out healthcare activities in health institutions [1-4]. Healthcare workers produce various types of waste in different health departments such as laboratories, medical research facilities, dental practices, veterinary clinics, physicians' offices, outpatient departments, on wards and immunization clinics [5-9]. Medical waste can be classified as chemical waste,

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radioactive waste, genotoxic waste, pathological waste, cytotoxic waste, pharmaceutical waste and general waste. Medical waste includes sharps, bodily fluids like blood, swabs, excreta, lab cultures, body parts, expired or contaminated vaccines and drugs, human tissue and carcasses used for research purposes. Each classification must be disposed according to the prescribed guidelines [10-13]. Methods of disposal of waste are incineration, sterilization, chemical disinfection and secured landfill. Segregation of medical waste must be done at the point of generation. This should be done by discarding the medical waste in colour-coded containers. Incineration, chemical disinfection and microwaving are methods of disposing of sharps. Radioactive waste must be handled, stored and Page | 59 disposed of in accordance with the prescribed legislature [14-17]. Laboratory and associated waste directly involved in specimen processing can be disposed of either through incineration or chemical disinfection. Human tissue must be disposed of through incineration. The disposal of pharmaceutical waste depends on the composition of the materials. It must be stored in non-reactive containers and disposed of through incineration [2]. There is a need to prevent injuries to other medical staff, and patients and to protect the environment from medical waste thus medical staff must have adequate knowledge on disposal of medical waste which in turn affects their attitude and practice toward hospital medical waste [13-16]. A study which was conducted among healthcare workers in Iganga general hospital, Uganda on medical waste management indicates the respondents had fairly good knowledge, a fairly keen attitude on the subject and somewhat fair practice on hospital waste management [3]. The existing legal provisions do not ensure that medical institutions, Local Government Authorities and Central Government units associated with the generation and management of HCW ensure a duty of care and take precautionary measures to protect health workers, waste handlers, the general public and the environment from adverse effects of improper handling of HCW. This lack of provisions makes it difficult for medical institutions to set up integrated HCWM plans and treatment and disposal facilities since there is no legal framework or codified penalties for improper conduct [4].

Statement of Problem

Globally, it is estimated that accidents caused by sharps account for 66,000 cases of infection with the hepatitis B virus, 16,000 cases of infection with the hepatitis C virus and 200 to 5,000 cases of HIV infection amongst the personnel of healthcare facilities [5]. One of the problems Uganda faces today is the improper handling and disposal of solid wastes. During the evaluation of injection safety and health care waste management (HCWM) in Uganda, it was found that 92 per cent of waste handlers have poor waste disposal methods, 3.4 percent have acceptable waste disposal methods and 4.6 percent have good waste disposal methods [6]. In most cases there is inadequate training of primary health care workers on hospital waste management practices and nonexistent segregation of hospital waste and risky disposal system. A study which was conducted among healthcare workers in Iganga general hospital, Uganda medical waste management indicates the respondent had a fairly good knowledge, a fairly keen attitude on the subject and somewhat fair practice on hospital waste management [7]. This motivated the researcher to carry out research assessing medical staff knowledge, attitude and practice towards medical waste management in Jinja Regional Referral Hospital so as to improve the ways through which waste management is done in this

Aim

The study is designed to assess the knowledge, attitude and practice of medical staff towards medical waste management.

Specific Objectives

- To determine the knowledge of the medical staff on medical waste disposal.
- To evaluate the attitudes of medical staff on medical waste disposal.
- To determine the practice of medical staff on medical waste disposal.

Research Questions.

- What is the level of knowledge of the medical staff on medical waste disposal? i.
- ii. What are the attitudes of medical staff on medical waste disposal?
- iii. What is the practice of medical staff on medical waste disposal?

METHODOLOGY

Research design.

The study was of a Cross-sectional type using a questionnaire with closed-ended questions that was availed to respondents. The design helped the researcher obtain more information quickly as it took little time to conduct. It used a quantitative research approach to determine the knowledge, attitudes and practices of medical staff on medical waste disposal in Jinja Regional Referral Hospital. Quantitative research is defined as a formal, objective and systematic process in which numerical data are used to obtain information about the world [8].

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Study population

The study included the population of all medical staff both male and female in Jinja Regional Referral Hospital.

Inclusion Criteria

The study only included all medical staff in Jinja Regional Referral Hospital.

Exclusion Criteria

The study excluded all people not authorized to provide medical care for example patients, and attendants among others.

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Sample Size

The sample size of 80 respondents was determined using [9].

Table 1: Table for Determining Sample Size for a Finite

		 			
N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—Nis population size. Sis sample size.

Population Source: Krejc

Source: Krejcie & Morgan, 1970

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Sampling procedure

Sampling is the process of choosing the units of the target population which are to be included in the study [10]. The respondents were selected randomly to administer the questionnaires.

Data collection methods

While undertaking this research, the researcher used questionnaires for data collection. The choice of this method was determined and interpreted by the nature of the data collected, the time available as well as the objectives of the study.

Questionnaires

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. It is also a carefully designed instrument for collecting data in accordance with the specifications of the research objectives, questions and hypotheses [11]. Amin further argues that this data collection method is less expensive compared to other methods. The researcher, therefore, used this method since it increases the chances of getting valid information that is filled in at the respondent's convenience. This tool was used to collect data from medical staff at Jinja Regional Referral Hospital. The researcher used questionnaires with close-ended questions. By use of the questionnaires, data was offered by respondents with limited interference on the part of the researcher. Questionnaires were used because they are cheap to administer to respondents scattered over a large area and quick in collecting information, within a short space of time. For the better collection of the data, the designed questionnaires were distributed to the selected respondents to tick the best alternatives of their choice hence reducing, uncalled vague responses, given its close-ended set up of questions. All the respondents were asked the same questions.

Validity of instruments

Validity refers to the extent to which the study's findings accurately depict the phenomenon being studied [12]. In order to test and improve on the validity of the questionnaire, the researcher vialed the first draft to colleagues pursuing rather similar investigations, as that of the researcher. The colleagues looked at the items and checked on the language clarity, relevancy and comprehensiveness of the content and length of the questionnaire. Scrutinized and developed under close guidance of the supervisor, with whom, the researcher made a number of adjustments in respect to various comments made and advice given. The instruments were piloted on an appropriate population of 10 respondents selected randomly from target population.

Reliability of instruments

Reliability refers to the degree of consistency with which an instrument measures whatever it is measuring [12]. Reliability was ensured by testing the questionnaire on 10 participants from the target population. The questionnaire was given to the participants to give comments on the clarity of the questions and give necessary corrections on the questionnaire.

Ethical considerations

Ethics according to [13], are symptoms of moral principles or rules of behaviour that govern a person's behaviour. Ethics are meant to ensure the rights and welfare of persons and communities that are subject to scientific study. A letter of introduction from the Department of clinical medicine and Dentistry through the Research and Ethical Committee KIU Western campus was submitted to the Medical Supretendant of Jinja Regional Referral Hospital for clearance to conduct the research in this hospital. The purpose of the study was clearly explained to the respondents in order for them to be conversant with it and provide the required data. The researcher ensured utmost confidentiality regarding the disclosure of respondents' identities without their informed consent.

Process of data collection

Having sought and obtained ethical approval, the researcher visited the hospital and introduced questionnaires to respondents that were used to collect data to assess medical staff's knowledge, attitude and practices towards medical waste management. The researcher used two research assistants that helped him with data collection.

Data analysis

Data were collated, tallied and analyzed with the aid of a Statistical Package for Social Sciences (SPSS, version 17). Descriptive and inferential statistics were used to analyze the data. The results were presented in tables as percentages, means and standard deviations.

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RESULTS Socio-demographics of the respondents Table 2: Socio-demographics of the respondents

AGE	FREQUENCY	PERCENTAGE
15-25	11	13.8
26-35	38	47.5
36-45	29	36.3
46 and above	2	2.5
Total	80	100
Marital status		
Single	15	18.8
Married	65	81.2
Total	80	100
RELIGION		
Christian	46	57.5
Muslim	10	12.5
Other Religion	24	30.0
Total	80	100
Level of education		
Primary level	30	37.5
Secondary level	15	18.8
Tertiary institution	20	25.0
None	15	18.8
Total	80	100

Most of the participants were between the age of 26-35 (47.5%), and 36-45 (36.3%) followed by those of 26-35 (47.5%), 46 and above (2.5%) and 15-25 (13.8%). Most of the participants were married 81.2%) followed by those living a single (18.8%) and widow (4%) life and then those who had separated/divorced (10%) Most of the respondents were of the Christian denomination (57.5%) followed by others religions (30%) and then Muslims (12.5%) For the case of education level, most of the respondents had attained primary level (37.5%), Secondary level (18.5%), Tertiary institution (25%) and none (18.8%).

Table 3: Medical staff's awareness of universal safety precautions

Tuble of Medical Stall Savareness of alliversal safety predaterons				
Awareness of	universal saf	ety	Frequency	Frequency
precautions				
YES			50	62.5%
NO			30	37.5%
Total			80	100

The majority (62.5%) knew the universal safety precautions unlike (37.5 %) who did not know about those precautions. According to the study findings students used laboratory safety precautions as most of them have had about it. According to the figure below, the majority of respondents (63%) got information from lecture lessons, (25%) have heard about safety measures in medical laboratories from senior lab technicians, and 11% got information from radios unlike a few 1% have got knowledge from other sources. This result can be interpreted that the participants are still students. Naturally, their most preferable information sources in the various fields, including laboratory safety, are the university environment with its courses, faculty members, books, and specialized websites.

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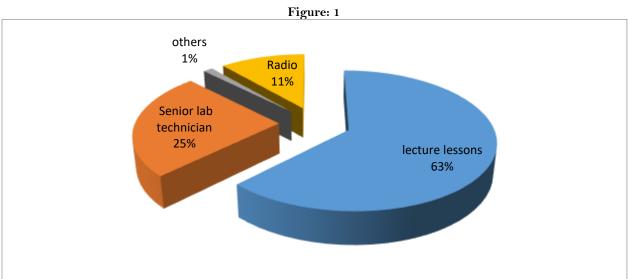


Table 4: The knowledge of the medical staff on medical waste disposal

Responses	Frequencies	Percentage
Personal protective equipment must be used routinely when handling medical waste.	4	5
Medical waste includes used, cartoons, papers, and plastics.	8	10
Rules/Acts for Bio-Medical Waste Management don't exist.	4	5
Placing medical waste in the wrong bin is not a high risk.	7	8.75
it is necessary to sort medical waste at the point of generation	10	12.5
Disposal of Anatomical waste should be in a black bag.	19	23.75
Improper waste disposal can lead to needle stick injuries.	16	20
TOTAL	80	100

From the study findings, on the knowledge of the medical staff on medical waste disposal, respondents 5% revealed that personal protective equipment must be used routinely when handling medical waste and that rules/Acts for Bio-Medical Waste Management don't exist, 10% revealed that medical waste includes used, cartoons, papers, and plastics, 8.75% showed that placing medical waste in the wrong bin is not high risk. 12.5% agreed that it is necessary to sort medical waste at the point of generation, and 23.75% revealed that disposal of Anatomical waste should be in the black bag unlike 20% of respondents showed that improper waste disposal can lead to needle stick injuries. The findings implied that medical staff had new medical waste disposal management practices.

Attitudes of medical staff on medical waste disposal

Table 5: Support of waste management practice in the hospital to be done by health workers

Characteristics	Frequency (Percent)	Cumulative Percent			
Support of waste management practice in the hospital to be done by health workers					
Yes	54(67.5)	88.0			
No	26 (32.5)	100.0			

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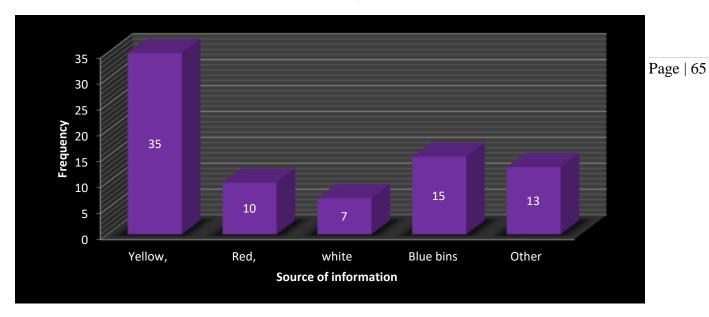
Table 6: Medical staff's attitude on medical waste disposal

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Responses	Frequencies	Percentage]
Is it necessary to have Biomedical waste	0	10	
Management rules?	8		
Do you feel that Biomedical Waste management was	10	12.5	
Compulsorily needed for healthcare delivery?	10		
Do you think your teaching hospital doing well regarding Biomedical	5	6.25	
Waste management	3		
Do you think your knowledge regarding Biomedical Waste Management	3	3.75	
is adequate?	3		
Will you advise your juniors to Follow colour coding for waste disposal?	12	15	
Will you inform to sanitary staff to transport waste once bag is full?	10	12.25	
Do you think any special training is required on biomedical waste	8	10	
management?	0		
Would you volunteer to attend programs that enhance upgrade of		18.75	
knowledge about waste management if arranged at JINJA REGIONAL	15		
REFERRAL HOSPITAL?			
Do you think you should be worried following a needle prick?	9	11.25	•
Total	80	100	

On the attitudes of medical staff on medical waste disposal, 10% of respondents argued that it is necessary to have Biomedical Waste Management rules, 12.5% revealed that Biomedical Waste management is compulsorily needed for healthcare delivery, 6.25% revealed that their teaching hospital is doing well regarding Biomedical Waste management, 3.75% showed that knowledge regarding Biomedical Waste Management is adequate, 15% agreed that they can advise their juniors to follow colour coding for waste disposal, 12.25% agreed that they can inform to sanitary staff to transport waste once the bag is full, 10% also showed that any special training is required on biomedical waste management, 18.75% showed that they can volunteer to attend programs that enhance upgrade of knowledge about waste management if arranged at JINJA REGIONAL REFERRAL HOSPITAL unlike it is possible to be worried following a needle prick.

The practice of medical staff on medical waste disposal. Figure 2: Colour codes used in the disposal of waste management



From the figure above, the majority 35% revealed that yellow is a colour code used, followed by 15% citing Blue bins, 10% citing red colour, and 7% citing white bins unlike 13% citing other colour codes. Some other respondents revealed that depending on how hazardous the waste is considered, there will need to use different types of containers for collection, and different methods for disposal.

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Table 7: the practice of medical staff on medical waste disposal.

Responses	Frequencies	Percentage
I practice hand hygiene in between every activity in the hospital.	8	10
I use gloves while handling medical waste always.	20	25
Color coding is used for segregating medical waste before disposal.	12	15
Liquid wastes are collected together with other wastes.	2	2.5
Sharp containers are replaced when they are ¾ full.	11	13.75
Used needles are discarded immediately after use.	22	27.5
I don't recap my needles before disposal into safety box.	5	6.25

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From the table findings, majority 27.5% of respondents agreed that used needles are—discarded immediately after use, 25% agreed that they use gloves while handling medical waste always, 13.7% revealed that sharp containers are replaced when they are ¾ full, 15% revealed that Color coding is used for segregating medical waste before disposal. The findings implied that inadequate knowledge of health care waste management and poor health care waste management practices are major negative findings yet they are fundamental elements in waste management. The researcher recommends that everyone in the institution must be involved and share the responsibility of an environmentally sound and sustainable waste management program.

DISCUSSIONSummary of findings

From the study findings, on the knowledge of medical staff on medical waste disposal, respondents 5% revealed that personal protective equipment must be used routinely when handling medical waste and that rules/Act for Bio Medical Waste Management don't exist, 10% revealed that medical waste includes used, cartoons, papers, and plastics, 8.75% showed that placing medical waste in wrong bin is not high risk. 12.5% agreed that it is necessary to sort medical waste at point of generation, 23.75% revealed that disposal of Anatomical waste should be into the black bag unlike 20% of respondents showed that improper waste disposal can lead to needle stick injuries. The findings are in relation with another study conducted Iganga general hospital about the knowledge, attitude and practice of health workers on medical management showed the respondents' had generally good knowledge, a fairly keen attitude on the subject and somewhat fair practice on medical waste management [7]. On the attitudes of medical staff on medical waste disposal, 10% of respondents argued that it is necessary to have Biomedical Waste Management rules, 12.5% revealed that Biomedical Waste management is compulsorily needed for healthcare delivery, 6.25% revealed that their teaching hospital is doing well regarding Biomedical Waste management, 3.75% showed that knowledge regarding Biomedical Waste Management is adequate, 15% agreed that they can advise their juniors to follow colour coding for waste disposal, 12.25% agreed that they can inform to sanitary staff to transport waste once the bag is full, 10% also showed that any special training is required on biomedical waste management, 18.75% showed that they can volunteer to attend programs that enhance upgrade of knowledge about waste management if arranged at Jinja Regional Referral Hospital. The findings are in line with a Study conducted in Iganga general hospital about the knowledge, attitude and practice of health workers on medical management showed the respondents had generally a fairly keen attitude toward medical waste management [7]. From the table findings, the majority 27.5% of respondents agreed that used needles are discarded immediately after use, 25% agreed that they use gloves while handling medical waste always, 13.7% revealed that sharp containers are replaced when they are 3/4 full, 15% revealed that Color coding is used for segregating medical waste before disposal. The findings implied that inadequate knowledge of healthcare waste management and poor healthcare waste management practices are major negative findings yet they are fundamental elements in waste management. The findings are also in line with a study which was conducted in Ghana on the disposal of medical waste revealed that both public and private hospitals have got waste management policies and teams. They have got internal storage facilities for storing the waste before it is finally disposed of, which is in line with the waste management guidelines [14-17].

CONCLUSION

Conclusion: Medical waste management is affected by knowledge, attitude and practice of medical workers. Some of the health care workers had knowledge gap and did not practice health care wastes management. Hence, providing adequate numbers of waste bins, regular training and supervision on medical waste management are recommended to improve the problems of poor management of medical wastes.

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RECOMMENDATIONS

Training programs need to focus on empowering nursing professionals in biomedical waste management with broad scope and practical knowledge in all aspects. The right practices and other activities of biomedical waste management and its ramifications in the form of avoiding injuries, the importance of vaccinations and following universal precautions can be achieved when adequately supported by IEC (information, education and communication) strategies like handouts, stickers, charts, celebrations of various days like hand hygiene day and other days can help in improving the practices of the employees of the organizations. Training the staff with Page | 67 Checklists and regular inspections can bring about accountability in the staff.

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