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Effectiveness of video assisted teaching program regarding knowledge and practice on biomedical waste management newer guidelines among biomedical waste handlers

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Abstract

In day today most of the biomedical waste handlers are unaware of newer guidelines. There is a need of training regarding newer guidelines on biomedical waste management to biomedical waste handlers for improving their work efficiency and adoption newer guidelines for safe practice of biomedical waste management therefore by improving the safety exposed to the infectious and toxic waste of the hospital.

Objectives

1. To assess the status of knowledge and practice among biomedical waste handler regarding new guidelines biomedical waste management.
2. To assess the status of knowledge and practice biomedical waste handler regarding new guidelines of biomedical waste management of after learning package.
3. To determine the association of knowledge and practice among biomedical waste handlers and selected sociodemographic variables.

Methods: one group pretest post test research design was used and samples were selected by using non-probability purposive sampling technique. The sample size was 55 biomedical waste handlers working in KH and MRC, Karad

Results: Results of present study showed that pre-test mean score of total knowledge was 10.96 and post-test it was increased up to 18.72 and practice score was increased from 16.09 to 19.36. The paired „t“ test was used for this study. The p value < 0.0001 which is considered to be Extremely Significant so it indicated that video assisted teaching programme was effective for improving knowledge and practices of biomedical waste handlers and there was significant association between demographic variables and knowledge and practice of biomedical waste handlers. Based on the analysis of findings it was shown that increase in the knowledge and practice scores of biomedical waste handlers after administration of video assisted teaching program.

Keywords: Video assisted teaching programme, knowledge and practice, biomedical waste handlers, effectiveness

Introduction

The Bio-medical Waste (Management and Handling) certain Rules and regulation has been passed in 1998 and further changes were passed for the regulation of BMWM. Biomedical Waste Management Rules in are also notified by Central Government dated on 28th Mar. For implementing the new laws every state's Pollution Control Board or Pollution control Committee are responsible. Many unregistered hospitals produced waste which is more dangerous ^[1] Due to improper management of waste disposal and products; medical wastes can be hazardous to the whole ecosystem and environment. BMWM is main aspect of infection control policy. The risk of injury increases if this waste is not handled properly ^[2]

The every hospital is required facility of effective disposal whether directly or via common biomedical waste treatment and disposal facilities (CBMWTF) and the exact disposal of Biomedical Waste Management are segregation, collection, transportation, storage and treatment ^[3]. The standard biomedical waste management (BMWM) methods are used for avoiding generation of waste or recovering of waste as much as possible, rather than disposing Reduce, recycle, and reuse is the concept of 3Rs on which good practices of biomedical waste management are done ^[4] The waste must be separated appropriately and so the production has given various color coding for waste collection. The methods of treatment are used for the biomedical wastes include chemical treatment, autoclaving, microwaving and the Shredding, deep burial and mutilation, incineration, are also related methods for the waste disposal ^[5]

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Methods

Research approach: The research approach used for present study was evaluative research approach.

Research Design: Research design used for present study was one group pre-test post-test research design.

Sample: It includes 55 numbers of sweepers from various wards and biomedical waste handlers from BMW department, who were working in the Krishna Hospital, Karad

Sampling Technique: Non probability purposive sampling technique.

Description of tool

The investigator has to collect data from sweepers and

Results

biomedical waste handlers from Krishna hospital using observational checklist and structured questionnaire.

Section A: It includes socio-demographic data in that age, gender, educational qualification, working experience, monthly income of family, previous biomedical waste training.

Section B: Observational checklist to observe the practices. It includes 20 observational items. One mark was given for each correct practice and each wrong practices given zero

Section C: Structured Questionnaire to assess knowledge of biomedical waste handler. It includes 22 knowledge questions related to biomedical waste management according newer guidelines

Table 1: Distribution of Biomedical Waste Handlers according to sociodemographic variables

N =55

S. No.		Socio – Demographic Variables	Frequency (F)	Percentage (P)
1	Age			
	a)	19 – 30 year	27	49.09%
	b)	31 – 40 year	12	21.81%
	c)	41 – 56 year	16	29.09%
2		Gender		
	a)	Male	38	69.09%
	b)	Female	17	30.90%
3		Education		
	a)	HSC	15	27.27%
	b)	SSC	30	54.54%
	c)	PRIMARY	10	18.18%
4		Experience		
	a)	0 – 5 Years	34	61.81%
	b)	6 – 10 Years	9	16.36%
	c)	11 – 15 Years	5	9.09%
	d)	More than 15 Years	7	12.71%
5		Monthly Income		
	a)	32,000 – 47,000 Rs	7	12.71%
	b)	18,000 – 31,000 Rs	12	21.81%
	c)	6000 – 18,000 Rs	12	21.81%
	d)	Below 6000 Rs	24	43.63%
6		Previous Training Regarding BMW		
		BMWM	50	90.90%
	a)	Taken	5	9.09%
	b)	Not taken		

Above table 1 indicates that of the majority of biomedical waste handlers i.e.27 (49.09%) belong to age group of 19 – 30 years & minimum handlers from age group 31-40 years i.e. 12 (21.81%). In gender wise, 38 (69.09%) handlers were males & 17 (30.90%) were female handlers. Majority of handlers are having their SSC educational status 30 (54.54%) & minimum handlers having their primary education. The majority of handlers were having experience 0 – 5 years that is 34

(61.81%) handlers & minimum handlers having more than 15 years of working experience. The 24 (43.63%) handlers were having income below Rs.6000 thousand & only 7 (12.71%) handlers having their income between 32,000-47,000 thousand Rs. And majority of handlers have taken training regarding biomedical waste management 50 (90.90%) & only 5 (9.09%) were not taken training regarding BMW.

Table 2: Distribution of Biomedical Waste Handlers according to BMW Handling practice score

N =55

Practices score	Pre-training		Post-training	
	Frequency	Percentage	Frequency	Percentage
Poor (00-7)	00	00	00	00
Average (8-14)	2	3.63%	00	00
Good (15-20)	53	96.36%	55	100%
Total	55	99.99%	55	100%

Table 2 shows that in pre observation none of biomedical waste handlers in poor category, 2 (3.63%) handlers had average practices & 53 (96.36%) handlers had good practices. After intervention it was improved in post observation

majority of workers i.e. 55 (100%) had good practices and none workers had average and poor practices in after intervention.

Table 3: Distribution of Biomedical Waste Handlers according to BMW Handling Knowledge score

Knowledge score	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Poor (00-8)	7	12.72%	00	00%
Average (9-15)	47	85.45%	3	5.45%
Good (16-22)	1	1.81%	52	94.54%
Total	55	99.98%	55	99.99%

N=55

Table 3 reveals that in pre-test there were 7 (12.72%) handlers in poor category who all improved after educational intervention as seen in post-test none of participant in poor

category. There was only one handler in good category before intervention which in increased to 52 (94.54%) in good category of knowledge after video assisted teaching program.

Table 4: Mean & SD of pre and post test scores of practices regarding biomedical waste management

Area of analysis	Mean ± SD	t value	P value
Pre test	16.090 ± 0.7521		
Post test	19.36 ± 0.6487	24.069	< 0.0001 Extremely
Difference	-3.273 ± 1.008		Significant

N=55

Above table 4 indicates the significant increase in practice score on biomedical waste management as Pre Mean = 16.090 SD = 0.7521 to Post Mean = 19.36 SD = 0.6487. It also indicates that calculated paired 't' value (t= 24.069). This indicates that the gain in practice score is statistically

significant at p < 0.0001 level. Therefore the video assisted teaching program was effective in improving practices regarding biomedical waste management among biomedical waste handlers

Table 5: Mean & SD of pre and post test scores of knowledge regarding biomedical waste management

Area of analysis	Mean ± SD	t value	p value
Pre test	10.963 ± 2.108		
Post test	18.727 ± 1.890	30.383	< 0.0001 Extremely
Difference	-7.764 ± 1.895		Significant

N=55

Above Table 5 indicates that after educational intervention, significantly increase in knowledge score of biomedical waste handlers as Pre Mean = 10.963 SD = 2.108 to Post Mean = 18.727 SD = 1.890. It also indicates that calculated paired 't' value (t= 30.383) this indicates that the gain in knowledge

score is statistically extremely significant at p < 0.0001 level. Therefore the video assisted teaching program was effective in improving knowledge regarding biomedical waste management among biomedical waste handlers.

Table 6: Association of knowledge and practice of biomedical waste handlers and socio-demographic variable by using unpaired 't' test.

Socio-demographic variable	Frequency	Knowledge score Mean ±SD	t value	p value	Practice score Mean ±SD	t value	p value
Gender	Male	38	2.362	0.0219*	16.15 ± 0.7893	0.7070	0.4827
	Female	17					10 ± 1.837
Training	Taken	50	0.04008	0.9682	16.14 ±	0.9506	0.3461
	Not taken	5					11 ± 1.414
					15.8 ± 0.8367		significant

N=55

The above table 6 depicts that gender of biomedical waste handlers were associated with pre test knowledge as the p value was 0.0219, but the gender was not associated with pre-test practice as the p value was 0.4827. Similarly the training

of the waste handlers was not associated with the pre-test knowledge and practice score as the p value for knowledge and practice was 0.9682 and 0.3461 respectively.

Table 7: Association of knowledge and practice of biomedical waste handlers and socio demographic variable by using ANNOVE test

N=55

Socio-demographic variable,		Frequency	Knowledge score Mean \pm SD	f value	p value	Practice score Mean \pm SD	f value	p value	
Age	19-30	27	10.592 \pm 1.782	8.814	0.0005*	16.148 \pm 0.6624	0.4935	0.6133	
	31-40	12	12.916 \pm 2.429			15.9166 \pm 0.9003		Not	
	41-56	16	10.125 \pm 1.455			16.1875 \pm 0.8342		significant	
Education	HSC	15	10.133 \pm 1.922	2.947	0.0613 not	15.93 \pm 0.7037	0.6044	0.5502 not	
	SSC	30	11.566 \pm 2.192		significant	16.2 \pm 0.7144		significant	
	Primary	10	10.4 \pm 1.647			16.1 \pm 9944			
Experience	0-5 Years	34	10.55 \pm 1.971	1.429	0.2452 not	16.088 \pm 0.8658	0.2875	0.8342	
	6-10Years	9	12.11 \pm 2.028			significant		16.11 \pm 0.60	Not significant
	11-15 Years	5	11.4 \pm 3.362					16.4 \pm 0.5477	
	More than 15 Years	7	11.14 \pm 1.574					16 \pm 0.57	
Income	32,000-47,000 Rs	7	10.85 \pm 1.34	0.2264	0.8776	16.41 \pm 0.51	2.348	0.0835	
	18,000-31,000 Rs	12	10.83 \pm 3.04		Not significant	15.66 \pm 0.77		Not significant	
	6000-18,000 Rs	12	11.41 \pm 2.539						
	Below 6000 Rs	24	10.83 \pm 1.52			16.20 \pm 0.77			

The above table 7 depicts that demographic variable like Education, Experience and Income was not significantly associate with pre-test knowledge and practice as the p value was < 0.0001. But the age is significantly associated with knowledge as the p value was 0.0005.

Discussion

The present study revealed that before administration of video assisted teaching program, the 47(85.45%) participant were having average knowledge, and 7 (12.72%) participants were having poor knowledge and only 1(1.81%) participant having good knowledge regarding BMWM, But after giving structured teaching plan and administering video assisted teaching program, majority of the handlers 52 (94.54%) were having good knowledge and the only 3(5.45%) were having average knowledge, and none of participants were having poor knowledge regarding biomedical waste management newer guidelines.

Study was supported by similar study on effectiveness of educational intervention on knowledge and practice among bio-medical waste handlers reveals that before giving educational intervention out of 187 samples, 110(58.8%) were having poor knowledge and after giving educational intervention there were 148(79.1%) handlers having excellent knowledge, the showing that no one person's having poor knowledge regarding BMWM [6]

Also the similar study was conducted by Adekunle Olaifa & *et al.* in (2018) showed that the Knowledge of HCW management was generally inadequate, with 42.7% of the participants scoring 'poor' overall. Just over half of the participants reported a good attitude towards the appropriate disposal of HCW but only 53.9% demonstrated good HCW management practices. There was a significant ($p < 0.05$) relationship between knowledge and practice and between attitudes and practices ($p < 0.05$) [7]

Conclusion

The main aim of the present study was assess the knowledge and practice regarding biomedical waste management

according to newer guidelines among biomedical waste handlers and hence the Video Assisted Teaching Program was an effective teaching tool used to increase the level of knowledge and practice regarding BMW Management never guidelines among biomedical waste handlers at Krishna Hospital Karad.

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