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Effectiveness of Video Assisted Teaching (VAT) program on Knowledge, Skill and Practice regarding Personal Protective Equipment (PPE) and biomedical waste management among the Grade IV worker: One group pre-test post-test research study

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Abstract

Background: Health workers including the Grade IV workers are constantly exposed to infectious materials and pathogens while they provide care to the patients. By practicing infection control techniques, the healthcare workers can avoid spreading microorganisms. This can be possible when there is up gradation of knowledge and practice of healthcare workers regarding PPE and Biomedical Waste Management.

Aim: The study aimed to assess the effectiveness of Video Assisted Teaching (VAT) program on Knowledge, Skill and Practice regarding Personal Protective Equipment (PPE) and Biomedical Waste Management among the Grade IV worker.

Materials and Methods: A pre-experimental one group pre-test post-test research design was adopted, 50 Grade IV workers in Rahman Hospitals Pvt Ltd, Guwahati, Assam were recruited as sample of the study using Non-probability Purposive sampling technique. Demographic Performa, Structured Knowledge Interview schedule questionnaire, Observational checklist on Skill and Practice tools regarding Personal Protective Equipment(PPE) and Biomedical Waste Management among the Grade IV worker were used to assess their knowledge, skill and practice, followed by administration of a Video Assisted Teaching (VAT) program on PPE and Biomedical waste management free of cost. The re-assessment of the knowledge, skill and practice was carried out on the 8th day of the pre-assessment. Data were analyzed by using the software package SPSS 20 version.

Results: The findings of the study revealed that most of the Grade IV workers belonged to the age group of 31 – 40 years and 41-50 years, most of the Grade IV workers were male and were married. Majority of the Grade IV workers completed secondary education and majority of them have worked between 7 to 9 years and are working in general ward. The mean difference between the pre-test and post-test knowledge was 7.36, the calculated 't' value between pre-test and post-test knowledge ($t = 12.32, p < 0.001^{**}$), was found higher than the tabulated value [$t = 2.02, df = 49$]. The mean difference between the pre-test and post-test Skill was 2.60. The calculated 't' value between pre-test and post-test Skill ($t = 7.35, p < 0.001^{**}$), was found higher than the tabulated value [$t = 2.02, df = 49$]. The mean difference between the pre-test and post-test Practice was 6.98. The calculated 't' value between pre-test and post-test Practice ($t = 12.76, p < 0.001^{**}$), was found higher than the tabulated value [$t = 2.02, df = 49$] which was statistically significant at 0.05 level of significance.

Conclusion: The study concludes that the Video Assisted Teaching (VAT) program on Personal Protective Equipment and Biomedical waste management was effective in enhancing the knowledge, skill and practice of the Grade IV worker.

Keywords: Assess, knowledge, skill, practice, PPE, biomedical waste management, Grade IV worker, Video Assisted Teaching (VAT) program

Introduction

Health workers especially the Grade IV workers are constantly exposed to infectious materials and pathogens while they provide care to the patients, maintaining cleanliness and sanitation and also during collection, segregation and dumping of wastes in hospital or any other healthcare center. There are plenty of chances for the healthcare workers to get infected by infections, so infection control measures are the most important step for healthcare workers.

By practicing infection control techniques, the healthcare workers can avoid spreading microorganisms. This can be possible only when there is up gradation of knowledge and attitude of healthcare workers regarding PPE and Biomedical Waste Management.

Methodology

The objectives of the study were to assess the knowledge, skill and practice regarding PPE and Biomedical Waste Management among Grade-IV workers. To assess the effectiveness of the Video Assisted Teaching (VAT) program regarding PPE and Biomedical Waste Management among Grade-IV worker. To find the correlation between Pre-test Knowledge score and pre-test Skill score, Pre-test Knowledge score and pre-test Practice score, Pre-test Skill score and pre- test Practice score of the Grade IV workers regarding PPE and Biomedical Waste Management. To find the association between Pre-test knowledge of the Grade IV workers with their selected demographic variables, Pre-test Skill of the Grade IV workers with their selected demographic variables, Pre-test Practice of the Grade IV workers with their selected demographic variables. The study was conducted among Grade IV workers working at Rahman Hospital Pvt Ltd. Formal permission was obtained from each participant. Every participant was assured of his/her privacy and confidentiality.

Sample size

The sample size was 50 Grade IV workers working at Rahman Hospitals Pvt. Ltd.

Sampling technique

Non-probability purposive sampling technique

Tools for data collection

Section A: Demographic Performa

Section B: Structured knowledge Interview Schedule Questionnaire on PPE and Biomedical waste management

Section C: Observational checklist on Skill regarding PPE and Biomedical waste management

Section D: Observational checklist on Practice regarding

PPE and Biomedical waste management.

Method of data collection

A Demographic Performa, Structured knowledge Interview Schedule Questionnaire on PPE and Biomedical waste management and Observational checklist on Skill and Practice regarding PPE and Biomedical waste management were used for the collection of the data in the study.

Procedure for data collection

Formal permission was taken and obtained from the concerned authorities. The data were collected in one month from the Grade IV workers working at Rahman Hospitals Pvt Ltd, Guwahati, Assam. Non-probability purposive sampling technique was used for the selection of Grade IV workers in the study. The investigator had given a self-introduction, explained the purpose of the study and ascertained the willingness of the subjects to participate in the study. The subjects were assured and confidentiality of the information provided by them and informed consent was obtained. The pre-test was conducted on the subjects by interviewing the knowledge and checklist observation on skill and practice regarding PPE and Biomedical waste management. After assessing the pre-test on knowledge, skill and practice regarding PPE and Biomedical waste management, a Video Assisted Teaching (VAT) program was administered to the subjects free of cost. Re-assessment was done by conducting post-test on the 8thday after administration of the video. Collected data were tabulated, analyzed and statistically calculated.

Data analysis

The data were analyzed and interpreted in accordance with the objectives of the study by using descriptive and inferential statistical methods. Frequency and percentage distribution methods were used for the analysis of demographic variables in the study.

Results

Table 1: Frequency and Percentage distribution of Grade IV workers according to demographic variables. n=50

Sl. No.	Demographic Variables	Groups	Frequency	Percentage
1	Age in years	20 –30 years	10	20%
		31 –40 years	17	34%
		41 –50 years	17	34%
		Above 51 years	6	12%
2	Gender	Male	28	56%
		Female	22	44%
3	Marital status	Married	38	76%
		Unmarried	12	24%
		Divorced	0	0%
4	Education	Primary education	2	4%
		Secondary education	42	84%
		Graduate and above	6	12%
5	Years of experience	0–3 years	6	12%
		4–6 years	11	22%
		7–9 years	23	76%
6	Area of work	General ward	39	78%
		ICU	5	10%
		OT	2	4%
		Emergency ward	4	8%
7	Any training Regarding PPE and Biomedical waste management	Yes	42	84%
		No	8	16%

Table 2: Effectiveness of the Video Assisted Teaching (VAT) program on Knowledge regarding Personal Protective Equipment (PPE) and Biomedical Waste Management before and after the implementation of the video assisted teaching (VAT) program n=50

Level of knowledge		Category as per score		Grade IV worker Knowledge	
Score		Pre-test		Post-test	
		Frequency	Percentage	Frequency	Percentage
Poor	0-12	23	46%	0	0%
Average	13-19	22	44%	16	32%
Good	20-24	5	10%	34	68%

Table 3: Paired t- test for calculation the comparison of the knowledge on PPE and Biomedical Waste Management before and after the implementation of Video Assisted Teaching (VAT) program. n=50

Knowledge level	Mean	Mean difference	Standard Deviation	t value	Df	P value
Pre-test Knowledge	13.20	7.36	4.19	12.32	49	<0.001**
Post-test	20.56		1.93			
Knowledge						

(** - significant at p<0.05; tabulated value, 't'= 2.02)

Table 4: Effectiveness of the Video Assisted Teaching (VAT) program on Skill regarding Personal Protective Equipment (PPE) and Biomedical Waste Management before and after the implementation of the Video Assisted Teaching (VAT) program. n=50

Level of Skill		Category as per score		Grade IV worker Skill	
Score		Pre-test		Post-test	
		Frequency	Percentage	Frequency	Percentage
Poor	0-8	20	40%	0	0%
Average	9-11	16	32%	20	40%
Good	12-15	14	28%	30	60%

Table 8: Pearson's Correlation coefficient between pre-test Knowledge and pre-test Skill, pre-test Knowledge and pre- test Practice, pre-test Skill and pre-test Practice among the Grade IV worker regarding PPE and Biomedical Waste Management n=50

	'r' value	'P' value
Pre-test knowledge	0.84	<0.001**
Pre-test skill		
Pre-test knowledge	0.82	<0.001**
Pre-test practice		
Pre-test skill	0.70	<0.001**
Pre-test practice		

(** -Significant at P<0.05)

Discussions

The study revealed that the Video Assisted Teaching (VAP) program on Personal Protective Equipment (PPE) and Biomedical Waste Management was effective which showed that the mean Knowledge, Skill and Practice scores of the Grade IV workers after the implementation of the Video Assisted Teaching (VAP) program was significantly higher than the mean Knowledge, Skill and Practice scores of the Grade IV workers before the implementation of the Video Assisted Teaching (VAP) program.

This finding is supported by a study conducted by Lalmanpuii M, Zagade T, Mohite VR, Shinde M (2015) [4] on Effectiveness of a Video Assisted Teaching program regarding knowledge on Biomedical Waste Management (BMW) among staff nurses. One group pre-test post-test design and evaluative approach were selected for this study among 60 staff nurses working in Krishna Hospital and

Table 5: Paired t-test for calculation the comparison of the Skill on PPE and Biomedical Waste Management before and after the implementation of Video Assisted Teaching (VAT) program n=50

Knowledge level	Mean	Mean difference	Standard Deviation	t value	Df	P value
Pre-test Knowledge	9.16	2.60	2.32	7.35	49	<0.001**
Post-test						
knowledge	11.80		1.57			

(** - significant at p<0.05; tabulated value, 't'= 2.02)

Table 6: Effectiveness of the Video Assisted Teaching (VAT) program on Practice regarding Personal Protective Equipment (PPE) and Biomedical Waste Management before and after the implementation of the Video Assisted Teaching (VAT) program n=50

Level of Practice		Category as per score		Grade IV worker Practice	
Score		Pre-test		Post-test	
		Frequency	Percentage	Frequency	Percentage
Poor	0-12	22	44%	0	0%
Average	13-19	22	44%	11	22%
Good	20-24	6	12%	39	78%

Table 7: Paired t- test for calculation the comparison of the Practice on PPE and Biomedical Waste Management before and after the implementation of Video Assisted Teaching (VAT) program n=50

Knowledge level	Mean	Mean difference	Standard Deviation	t value	Df	P value
Pre-test Knowledge	13.90	6.98	4.10	12.76	49	<0.001**
Post-test						
knowledge	20.88		1.73			

(** - significant at p<0.05; tabulated value, 't'= 2.02)

Medical Research Centre, Karad. It was observed that after administering the video assisted teaching program the mean of total knowledge score was increased to 26.03 from 17.38 that of the pre-test knowledge mean score. While the standard deviation S.D of post-test knowledge (3.80) seem to be dispersed than pre-test (3.40). The results show that there is a lack of appropriate information regarding BMW management among staff nurses.

The finding is also supported by a study conducted by Sharma R, Mohanty A, Singh V, *et al* (2021) [3] on effectiveness of a video- based online training for healthcare workers to prevent COVID-19 infection at tertiary care level institute, Uttarakhand, India. A quasi- experimental study was undertaken to assess the effect of intervention the video-assisted teaching regarding PPE and Biomedical waste management. A total of 576 participants were included in the study. The result of comparisons pre-test and

post-test scores showed that the intervention through video-assisted teaching resulted in improvement of knowledge which was found to be statistically significant (p -value <0.001)

Conclusion

From the findings of the present study the following conclusion were drawn

Mean Knowledge, Skill and Practice scores of the Grade IV workers after the implementation of the Video Assisted Teaching (VAP) program was significantly higher than the mean Knowledge, Skill and Practice scores of the Grade IV workers before the implementation of the Video Assisted Teaching (VAP) program. Therefore, from the findings of the study it was clearly concluded that the Video Assisted Teaching (VAP) program on Personal Protective Equipment (PPE) and Biomedical Waste Management was quite effective among the Grade IV workers.

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