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A study to assess the effectiveness of nurse led intervention on awareness and practice regarding occupational hazards among sanitary workers at selected hospital

[1]Dr. Tamilarasi B, [2]Nivedha C, [3]Muthumariammal S and [4]Yuvasri K

[1]Principal, Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India

[2]Lecturer, Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India

[3, 4]M. Sc Nursing II Year Students Madha College of Nursing, Chennai, Tamil Nadu, India

Corresponding Author: Dr. Tamilarasi B

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Abstract

Sanitary workers play a critical role in maintaining hygiene and preventing infections in healthcare settings, yet they are often exposed to various occupational hazards, including biological, chemical, physical, and psychosocial risks, with limited awareness and inadequate safety practices. This study aimed to assess the effectiveness of a nurse-led intervention on awareness and practice regarding occupational hazards among sanitary workers at selected hospital. A quantitative, quasi-experimental pretest-posttest design was adopted, involving 60 sanitary workers selected through simple random sampling and divided equally into experimental (n=30) and control (n=30) groups. The experimental group received a nurse-led intervention comprising one-hour daily sessions for one week, using PowerPoint presentations and videos. Awareness was assessed using a self-administered awareness questionnaires and practice was evaluated with a self-structured practice checklist. The findings revealed that in the experimental group, the mean awareness score increased from 6.3 ± 2.4 to 10.3 ± 2.6 ($t = 14.13$, $p < 0.001$), and the mean practice score improved from 5.7 ± 1.6 to 11.3 ± 2.0 ($t = 17.3$, $p < 0.001$), indicating statistically significant improvement, while the control group showed no significant changes. Post-test awareness was significantly associated with area of work and education level. The study concludes that nurse-led interventions are effective in enhancing awareness and improving practice regarding occupational hazards among sanitary workers, emphasizing the need for structured training programs to reduce occupational risks and promote workplace safety across all worker categories.

Keywords: Sanitary workers, occupational hazards, nurse-led intervention, awareness and practice, workplace safety

Introduction

Sanitary workers play a key role in maintaining cleanliness and preventing infections in healthcare environments including hospitals, offices, industries, municipalities, and clinical laboratory services. Their responsibilities in clinical settings are crucial for infection control and prevention of nosocomial infections, which pose risks to patients, healthcare workers, and the public. Despite their important roles, HSWs often face significant occupational hazards and lack proper recognition of their work.

Training programs designed to improve awareness and safe practices among these workers are essential. Educational interventions can empower sanitary workers with knowledge about occupational risks, correct use of PPE, protocols for waste disposal, and emergency procedures. Such training not only improves their personal safety but also enhances overall hospital hygiene and infection control.

The researcher's clinical experiences that sanitary workers are constantly exposed to various occupational hazards. Despite their critical role in maintaining cleanliness and infection control, many workers lacked adequate knowledge and demonstrated unsafe practices that could compromise their health and safety. These observations highlighted a gap in awareness and practice regarding occupational hazards among this group. This motivated us to choose this study, as we wanted to explore how a structured nurse-led intervention could empower sanitary workers with knowledge and practical skills to reduce occupational risks. By conducting this research, researchers aimed to contribute to improving workplace safety, promoting the well-being of sanitary workers, and emphasizing the essential role of nurses in educating and protecting hospital support staff.

Statement

A study to assess the effectiveness of nurse led intervention on awareness and practice regarding occupational hazards among sanitary workers at selected hospital.

Objectives of the study

- To assess the pre-test and post-test level of awareness and practice regarding occupational hazards among sanitary workers in experimental group and control group
- To evaluate the effectiveness of nurse led intervention

on awareness and practice regarding occupational hazards among sanitary workers in experimental group and control group
- To associate the post-test level awareness and practice regarding occupational hazards among sanitary workers with their selected demographic variables.

Research hypotheses

H1: There will be a significant difference between the mean pre-test and posttest level of awareness and practice regarding occupational hazards among sanitary workers

H2: There will be a significant association in the posttest level of awareness and practice regarding occupational hazards among sanitary workers with their selected demographic variables

Materials and methods

Quantitative research approach was adopted for the study and Quasi-experimental pretest and post-test research design was selected. The study was conducted in government hospital at Chennai. The sample of 60 sanitary workers. Using Simple random sampling technique, the sample were selected 30 in experimental group and 30 in control group who fulfilled the inclusion criteria. The tool used for the study was a self-administered awareness questionnaires was used to assess the awareness. It consists of 15 questions to assess the awareness regarding the occupational hazards. The correct response carries one mark and the wrong answer carries no mark. The scores were interpreted as follows adequate awareness > 10, moderate awareness 6-10, inadequate awareness <5. Later, self-structured practice checklist was used to assess the practice. The scores were interpreted as follows acceptable > 10, moderate practice 6-10, unacceptable practice <5. Structured training program designed to provide information regarding occupational hazards through power point presentation and videos for a duration of 1 hour once daily for one week. On day 7, the post-test was done using the same tool to both the experimental and control group.

Results and Discussion

The data collected was analyzed using descriptive and inferential statistics. Majority of sanitary workers with regard to age, 12(40%) were between 41-50 years in the experimental group, 13 (43.3%) were between 31-40 years in the control group. Regarding gender, 19(63.3%) of females in the experimental group and 18 (60%) of females in the control group. Considering marital status, in the experimental group, 15(50%) were married, whereas in the control group, 19 (63.3%) were married. In terms of educational level, in the experimental group, 12 (40%) were illiterate, in the control group, 15 (50%) were illiterate. With regard to work experience, 18 (60%) of the experimental group had less than 5 years of experience and 16 (53.3%) had less than 5 years' experience in control group. Regarding daily work hours, in the experimental group, 25 (83.3%) of sanitary workers work for 8 hours per day while in the control group, 27 (90%) of sanitary workers work for 8 hours. In terms of area of work, in the experimental group, 12 (60%) of sanitary workers in wards and control group, 17 (56.7%) were in wards. Regarding immunization history, in the experimental group, 17 (56.7%) had received the hepatitis B vaccine and 15 (50%) had received TT injection and control group, 12 (60%) had received the hepatitis B vaccine and 16 (53.3%) had received TT injection

The first objective was to assess the pre-test and post-test level of awareness and practice regarding occupational hazards among sanitary workers in experimental group and control group

In Experimental group the pretest, 2(6.67%) participants had adequate awareness, 13(43.33%) participants had moderate awareness and 15(50%) participants had inadequate awareness. Whereas in the post-test, 17(56.67%) participants had adequate awareness, 13(43.33%) participants had moderate awareness and none of them had inadequate awareness.

In control group the pretest, 1(3.33%) participants had adequate awareness, 13(43.33%) participants had moderate awareness and 16(53.33%) participants had inadequate awareness. Whereas in the post-test, 2(6.67%) participants had adequate awareness, 12(40%) participants had moderate awareness and 16(53.33%) participants had inadequate awareness.

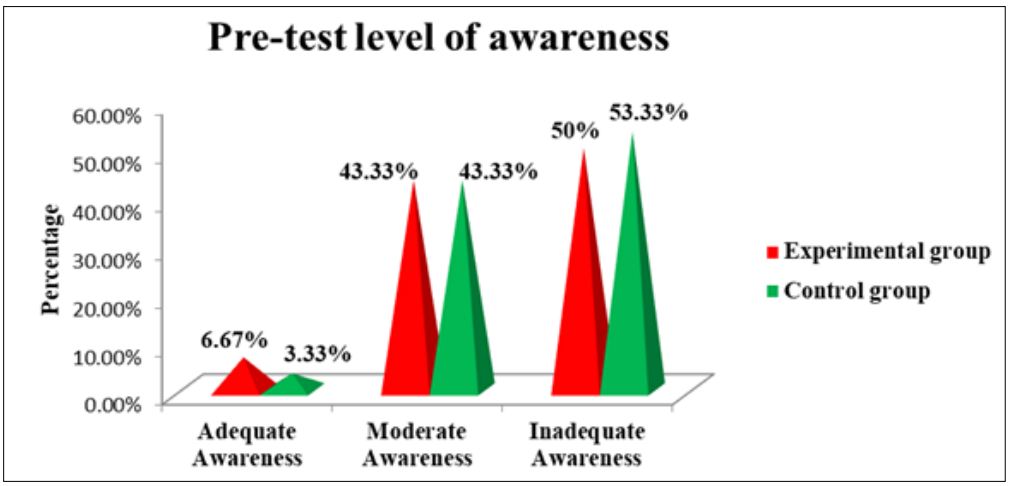

Fig 1: Percentage distribution of pre-test level of awareness regarding occupational hazards among sanitary workers in experimental group and control group

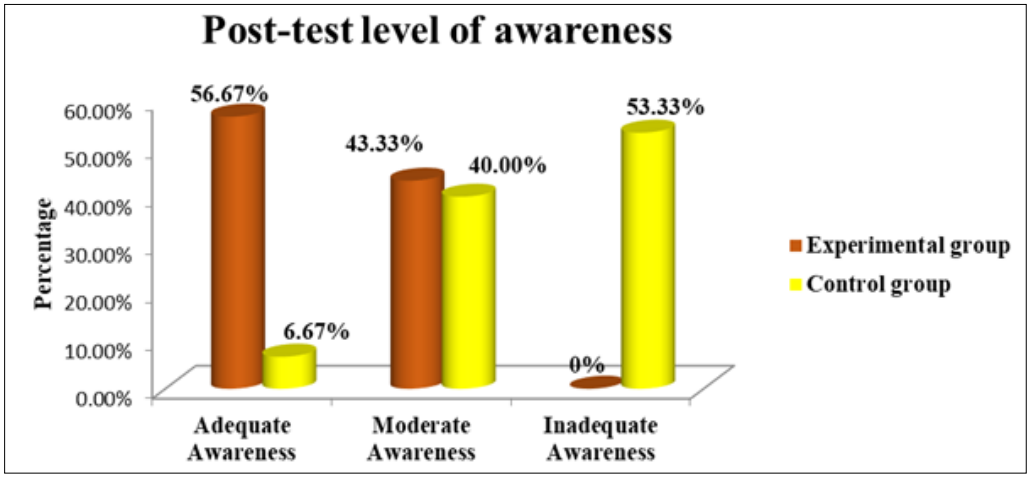

Fig 2: Percentage distribution of post-test level of awareness regarding occupational hazards among sanitary workers in experimental group and control group

In experimental group the pretest, none of them had acceptable practice, 12(40%) participants had moderate practice and 18(60%) participants had unacceptable practice. Whereas in the post-test, 17(56.67%) participants had acceptable practice, 13(43.33%) participants had moderate practice and none of them had unacceptable practice.

In control group the pretest, none of them had acceptable practice, 16(53.33%) participants had moderate practice and 14(46.67%) participants had unacceptable practice. Whereas in the post-test, none of them had acceptable practice, 18(60%) participants had moderate practice and 12(40%) participants had unacceptable practice.

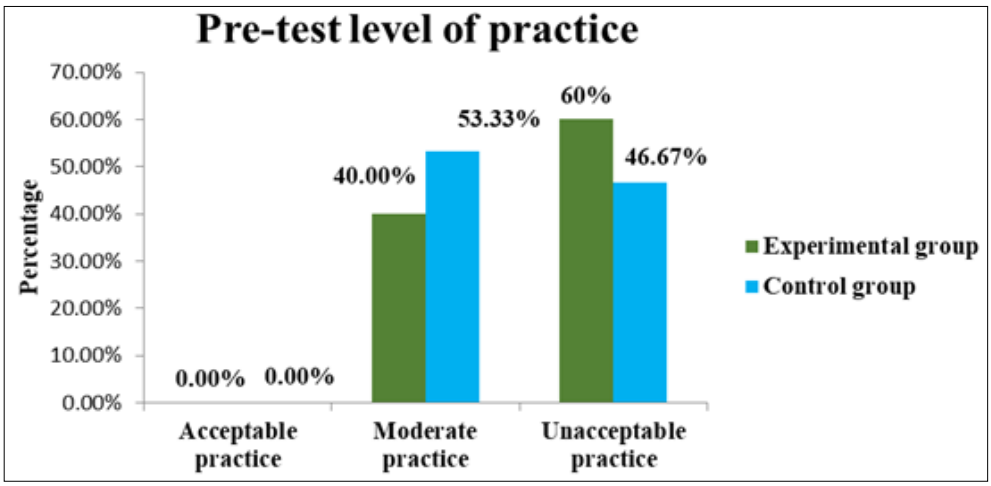

Fig 3: Percentage distribution of pre-test level of practice regarding occupational hazards among sanitary workers in experimental group and control group

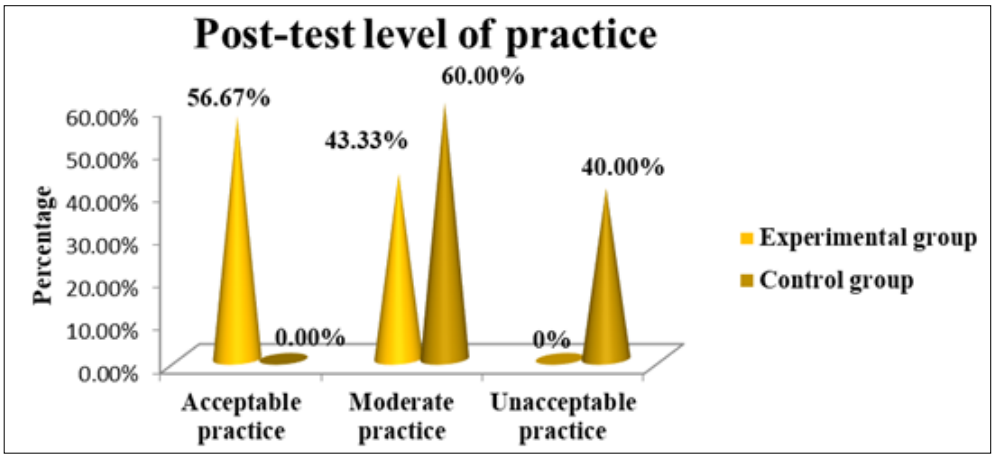

Fig 4: Percentage distribution of post-test level of practice regarding occupational hazards among sanitary workers in experimental group and control group

The second objective was to evaluate the effectiveness of nurse led intervention on awareness and practice regarding occupational hazards among sanitary workers in experimental group and control group

Table 1: Effectiveness of nurse led intervention on awareness regarding occupational hazards among sanitary workers in experimental group and control group

Group	Level of awareness				Mean difference	Student paired t-test
	Pretest		Post-test			
	Mean	S.D	Mean	S.D		
Experimental group	6.3	2.4	10.3	2.6	4	14.13***
Control group	6.1	2.3	6.2	2.5	0.1	1.85

***P<0.001

Table 1 shows that, in experimental group, the pre-test mean score of awareness regarding occupational hazards was 6.3 ±2.4 and post-test mean score of awareness regarding occupational hazards was 10.3± 2.6. The mean difference score was 4. The calculated paired "t" test value of 14.13 was found to be statically very highly significant at p<0.001 level. In control group, the pre-test mean score of awareness regarding occupational hazards was 6.1± 2.3 and post-test mean score of awareness regarding occupational hazards was 6.2± 2. The mean difference score was 0.1. The calculated paired "t" test value of 1.85 was not statically significant at p<0.001 level. It reveals that nurse led intervention was found to be effective in increase awareness regarding occupational hazards among sanitary workers.

Table 2: Effectiveness of nurse led intervention on practice regarding occupational hazards among sanitary workers in experimental group and control group

Group	Level of practice				Mean difference	Student paired t-test
	Pretest		Post-test			
	Mean	S.D	Mean	S.D		
Experimental group	5.7	1.6	11.3	2.0	5.6	17.3***
Control group	5.8	1.7	6.1	1.8	0.1	2.63

***P<0.001

Table 2 shows that, in experimental group, the pre-test mean score of practice regarding occupational hazards was 5.7 ±1.6 and post-test mean score of practice regarding occupational hazards was 11.33± 2.0. The mean difference score was 5.6. The calculated paired "t" test value of 17.3 was found to be statically very highly significant at p<0.001 level. In control group, the pre-test mean score of practice regarding occupational hazards was 5.8± 1.7 and post-test mean score of practice regarding occupational hazards was 6.1± 1.8. The mean difference score was 0.1. The calculated paired "t" test value of 2.63 was not statically significant at p<0.001 level. It revels that nurse led intervention was found to be effective in improving practiceregarding occupational hazards among sanitary workers.

The third objective was to associate the post-test level awareness and practice regarding occupational hazards among sanitary workers with their selected demographic variables in experimental group and control group

Table 3: Association of post-test level of awareness among sanitary workers in experimental group with their selected demographic variables

Demographic variables		Post test level of awareness						Chi square test
		Adequate		Moderate		Inadequate		
		N	%	N	%	N	%	
Age	20-30 years	3	60	2	40	0	0	$\chi2$ = 2.1493 P= 0.05* (NS) df = 6
	31-40 years	5	55.6	4	44.4	0	0	
	41-50 years	8	66.7	4	33.3	0	0	
	Above 50 years	1	25	3	75	0	0	
Gender	Male	5	45.5	6	54.5	0	0	$\chi2$ = 0.8892 P= 0.05* (NS) df = 2
	Female	12	63.2	7	36.8	0	0	
Marital status	Married	8	53.3	7	46.7	0	0	$\chi2$ = 0.1794 P= 0.05* (NS) df = 6
	Unmarried	0	0	0	0	0	0	
	Separated/divorced	4	57.1	3	42.9	0	0	
	Widower	5	62.5	3	37.5	0	0	
Level of education	Illiterate	6	54.5	5	45.5	0	0	$\chi2$ = 0.151 P= 0.05* (NS) df =6
	Primary education	5	62.5	3	37.5	0	0	
	Secondary education	6	54.5	5	45.5	0	0	
	Higher education	0	0	0	0	0	0	
Work experience	Less than 5 years of experience	11	61.1	7	38.9	0	0	$\chi2$ = 0.362 P= 0.05* (NS) df =2
	More than 5 years of experience	6	50	6	50	0	0	
Daily work hours	6 hours	0	0	0	0	0	0	$\chi2$ = 0.6787 P= 0.05* (NS) df =4
	8 hours	15	60	10	40	0	0	
	12 hours	2	40	3	60	0	0	
Area of work	Outpatient département	3	60	2	40	0	0	$\chi2$ = 4.0723 P= 0.05* (S) df =8
	ward	12	66.7	6	33.3	0	0	
	ICU/CCU	0	0	2	100	0	0	
	Laboratories	1	50	1	50	0	0	
	other	1	33.3	2	66.7	0	0	
History of hepatitis	Done	10	58.8	7	41.2	0	0	$\chi2$ =0.0745

B vaccine	Not done	7	53.8	6	46.2	0	0	P= 0.05* (NS) df =2
TT injection	Done	9	60	6	40	0	0	$\chi2$ =0.1358 P= 0.05* (NS) df =2
	not done	8	53.3	7	46.7	0	0	

*p≤0.05, S- significant, NS - Not significant

Table 3 represents the association of post-test level of awareness among sanitary workers with their selected demographic variables. The demographic variable area of work (χ^2 = 4.07) had shown a statistically significant association between the post-test level of awareness at p ≤ 0.05level. The other demographic variables such as age, gender, marital status, level of education, work experience, daily work hours, history of Hepatitis B vaccination, and TT injection had not shown a statistically significant association between the post-test level of awareness at p ≤ 0.05 level.

Table 4: Association of post-test level of awareness among sanitary workers in control group with their selected demographic variables

Demographic variables		Post test level of awareness						Chi square test
		Adequate		Moderate		Inadequate		
		N	%	N	%	N	%	
Age	20-30 years	0	0	2	50	2	50	$\chi2$ = 3.0865 P= 0.05* (NS) df = 6
	31-40 years	1	7.7	4	30.8	8	61.5	
	41-50 years	0	0	4	50	4	50	
	Above 50 years	1	20	2	40	2	40	
Gender	Male	1	7.1	4	28.6	7	50	$\chi2$ = 0.3992 P= 0.05* (NS) df = 2
	Female	1	5.6	8	44.4	9	50	
Marital status	Married	1	5.3	9	47.4	9	47.4	$\chi2$ =1.7584 P= 0.05* (NS) df = 6
	Unmarried	0	0	0	0	0	0	
	Separated/divorced	1	14.3	2	28.6	5	71.4	
	Widower	0	0	1	33.3	2	66.7	
Level of education	Illiterate	1	6.3	6	37.5	8	50	$\chi2$ =4.4443 P= 0.05* (S) df =6
	Primary education	0	0	4	44.4	5	55.6	
	Secondary education	0	0	1	33.3	2	66.7	
	Higher education	1	33.3	1	33.3	1	33.3	
Work experience	Less than 5 years of experience	1	5.6	7	38.9	8	44.4	$\chi2$ =0.2009 P= 0.05* (NS) df =2
	More than 5 years of experience	1	7.1	5	35.7	8	57.1	
Daily work hours	6 hours	0	0	0	0	0	0	$\chi2$ =0.3703 P= 0.05* (NS) df =4
	8 hours	2	7.4	11	40.7	14	51.9	
	12 hours	0	0	1	33.3	2	66.7	
Area of work	Outpatient département	0	0	4	57.1	3	42.9	$\chi2$ = 10.0184 P= 0.05* (S) df =8
	Ward	1	5.9	6	35.3	10	58.8	
	ICU/CCU	1	50	1	50	0	0	
	Laboratories	0	0	0	0	2	100	
	other	0	0	1	50	1	50	
History of hepatitis B vaccine	Done	1	5.6	7	38.9	10	55.6	$\chi2$ =0.1389 P= 0.05* (NS) df =2
	Not done	1	7.7	5	38.5	6	46.2	
TT injection	Done	1	6.7	7	46.7	8	53.3	$\chi2$ =0.2009 P= 0.05* (NS) df =2
	not done	1	7.1	5	35.7	8	57.1	

*p≤0.05, S- significant, NS - Not significant

Table 4 represents the association of post-test level of awareness among sanitary workers with their selected demographic variables. The demographic variables level of education (χ^2 = 4.44) and area of work (χ^2 = 10.01) had shown a statistically significant association with the post-test level of awareness at p ≤ 0.05 level. The other demographic variables such as age, gender, marital status, work experience, daily work hours, history of Hepatitis B vaccination, and TT injection had not shown a statistically significant association between the post-test level of awareness at p ≤ 0.05 level.

Table 5: Association of post-test level of practice among sanitary workers in experimental group with their selected demographic variables

Demographic variables		Post test level of practice						Chi square test
		Adequate		Moderate		Inadequate		
		N	%	N	%	N	%	
Age	20-30 years	2	40	3	60	0	0	$\chi2$ = 1.0181 P= 0.05* (NS)
	31-40 years	6	66.7	3	33.3	0	0	

	41-50 years	7	58.3	5	41.7	0	0	df = 6
	Above 50 years	2	50	2	50	0	0	
Gender	Male	7	63.6	4	36.4	0	0	$\chi2$ = 0.3436 P= 0.05* (NS) df = 2
	Female	10	52.6	9	47.4	0	0	
Marital status	Married	9	60	6	40	0	0	$\chi2$ =0.2134 P= 0.05* (NS) df = 6
	Unmarried	0	0	0	0	0	0	
	Separated/divorced	4	51.7	3	42.9	0	0	
	Widower	4	50	4	50	0	0	
Level of education	Illiterate	7	58.3	5	41.7	0	0	$\chi2$ =0.2036 P= 0.05* (NS) df =6
	Primary education	4	50	4	50	0	0	
	Secondary education	6	60	4	40	0	0	
	Higher education	0	0	0	0	0	0	
Work experience	Less than 5 years of experience	10	55.6	8	44.4	0	0	$\chi2$ =0.0226 P= 0.05* (NS) df =2
	More than 5 years of experience	7	58.3	5	41.7	0	0	
Daily work hours	6 hours	0	0	0	0	0	0	$\chi2$ =0.0272 P= 0.05* (NS) df =4
	8 hours	14	56	11	44	0	0	
	12 hours	3	60	2	40	0	0	
Area of work	Outpatient département	3	60	2	40	0	0	$\chi2$ = 0.2261 P= 0.05* (NS) df =8
	Ward	10	55.6	8	44.4	0	0	
	ICU/CCU	1	50	1	50	0	0	
	Laboratories	1	50	1	50	0	0	
	other	2	66.7	1	33.3	0	0	
History of hepatitis B vaccine	Done	10	58.8	7	41.2	0	0	$\chi2$ =0.0745 P= 0.05* (NS) df =2
	Not done	7	53.8	6	46.2	0	0	
TT injection	Done	9	60	6	40	0	0	$\chi2$ =0.1358 P= 0.05* (NS) df =2
	not done	8	53.3	7	46.7	0	0	

*****p≤0.05, S- significant, NS - Not significant

Table 5 represents the association of post-test level of practice among sanitary workers with their selected demographic variables. The analysis shows that all the demographic variables such as age, gender, marital status, level of education, work experience, daily work hours, area of work, history of Hepatitis B vaccination, and TT injection had not shown any statistically significant association with the post-test level of practice of sanitary workers at $p \leq 0.05$ level.

Table 6: Association of post-test level of practice among sanitary workers in control group with their selected demographic variables

Demographic variables		**Post test level of practice**						**Chi square test**
		Adequate		**Moderate**		**Inadequate**		
		N	**%**	**N**	**%**	**N**	**%**	
Age	20-30 years	0	0	2	50	2	50	$\chi2$ = 0.2003 P= 0.05* (NS) df = 6
	31-40 years	0	0	8	61.54	5	38.46	
	41-50 years	0	0	5	62.5	3	37.5	
	Above 50 years	0	0	3	60	2	40	
Gender	Male	0	0	9	69.23	4	30.77	$\chi2$ = 0.8145 P= 0.05* (NS) df = 2
	Female	0	0	9	52.94	8	47.06	
Marital status	Married	0	0	12	63.16	7	36.84	$\chi2$ =0.4678 P= 0.05* (NS) df = 6
	Unmarried	0	0	0	0	0	0	
	Separated/divorced	0	0	4	50	4	50	
	Widower	0	0	2	66.67	1	33.33	
Level of education	Illiterate	0	0	9	60	6	40	$\chi2$ =0.185 P= 0.05* (NS) df =6
	Primary education	0	0	5	55.56	4	44.44	
	Secondary education	0	0	2	66.67	1	33.33	
	Higher education	0	0	2	66.67	1	33.33	
Work experience	Less than 5 years of experience	0	0	10	62.5	6	37.5	$\chi2$ =0.0893 P= 0.05* (NS) df =2
	More than 5 years of experience	0	0	8	57.14	6	42.86	
Daily work hours	6 hours	0	0	0	0	0	0	$\chi2$ = 0.0617 P= 0.05* (NS) df =4
	8 hours	0	0	16	59.26	11	40.74	
	12 hours	0	0	2	66.67	1	33.33	

Area of work	Outpatient département	0	0	4	57.14	3	42.86	$\chi 2 = 1.5335$ P= 0.05* (NS) df =8
	ward	0	0	10	58.82	7	41.18	
	ICU/CCU	0	0	2	100	0	0	
	Laboratories	0	0	1	50	1	50	
	other	0	0	1	50	1	50	
History of hepatitis B vaccine	Done	0	0	9	50	9	50	$\chi 2 =1.875$ P= 0.05* (NS) df =2
	Not done	0	0	9	75	3	25	
TT injection	Done	0	0	10	62.5	6	37.5	$\chi 2 =0.0893$ P= 0.05* (NS) df =2
	not done	0	0	8	57.14	6	42.86	

*****p≤0.05, S- significant, NS - Not significant

Table 6 represents the association of post-test level of practice among sanitary workers with their selected demographic variables. The analysis shows that all the demographic variables—age, gender, marital status, level of education, work experience, daily work hours, area of work, history of Hepatitis B vaccination, and TT injection—did not show any statistically significant association with the post-test level of practice of sanitary workers at $p \leq 0.05$. Across all categories, the majority of participants demonstrated moderate practice (ranging from 50% to 100%), while a smaller proportion had inadequate practice (ranging from 25% to 50%). No participants were observed to have adequate practice. These findings indicate that the selected demographic variables did not significantly influence the post-test practice levels among the participants.

Conclusion

The study concludes that nurse-led interventions are effective in improving awareness and practice regarding occupational hazards among sanitary workers. The findings highlight the importance of structured training programs to reduce occupational risk exposure and enhance workplace safety. Demographic factors such as work area and education level influence awareness but do not significantly affect practice outcomes, emphasizing the need for comprehensive training across all worker categories**.**

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