

## Impact of Intensive Training Programme on The Knowledge and Practice of Infection Control Among Auxiliary Staff in a Tertiary Care Hospital

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### ABSTRACT

**Objective:** To determine the impact of health education intervention in the auxiliary healthcare staff regarding infection control knowledge and practices.

**Study Design:** Quasi-experimental study.

**Place and Duration of Study:** Inpatient departments, Fauji Foundation Hospital Rawalpindi, from Aug to Sep 2020.

**Methodology:** Study participants were working as the auxiliary staff at Inpatient departments of Fauji Foundation Hospital. Pre-test was carried out for baseline assessment of knowledge and practice of infection control. There was training session of 3 hours comprising of lecture, practical demonstration and hands-on training regarding WHO five steps of hand hygiene, safe disposal of sharps and use of PPEs. Effectiveness of training intervention was assessed after one month.

**Results:** Mean knowledge score increased from  $8.22 \pm 2.83$  to  $12.43 \pm 2.05$  after the training ( $p < 0.001$ ). Similarly significant improvement was observed in infection control practices i.e., mean practice score improved from  $3.64 \pm 1.39$  to  $6.11 \pm 1.27$  ( $p < 0.001$ ).

**Conclusion:** Training brought about significant improvement in both the knowledge and practice in all the three areas of infection control.

**Keywords:** Auxiliary staff, Infection control practices, Training programme.

**How to Cite This Article:** Khan N, Azam N, Mahmood H, Iftikhar A, Afzal A. Impact of Intensive Training Programme on the Knowledge and Practice of Infection Control Among Auxiliary Staff in A Tertiary Care Hospital. *Pak Armed Forces Med J* 2022; 72(1): 54-57. Doi: <https://doi.org/10.51253/pafmj.v72i1.5637>

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### INTRODUCTION

Auxiliary staff in health care are defined as the persons who function in an augmenting capacity facilitating the role of primary health care workers. They include janitorial staff, helpers, ward boys and stretcher bearers etc.<sup>1,2</sup> Infection control is an area of concern in health care facilities and affects the quality of care of millions of patients.<sup>3</sup> Safe, effective and high quality healthcare demands that the patients should not get any additional burden of disease while they are undergoing treatment in a healthcare facility. Health care-associated infections (HAIs)/nosocomial infections are infections that develop while undergoing treatment in a health care facility and appear 48 hours or more after being hospitalized or within 30 days after receiving health care.<sup>4</sup> Approximately 15-19% of hospitalized patients are affected by HAIs in developed and developing countries respectively.<sup>5</sup>

Besides being a source of spread of nosocomial infections, the frontline workers are themselves affected by infections acquired through their workplace.

Around 3 million health care workers fall victim to blood borne infections each year accounting for 15,000 cases of hepatitis C, 70,000 cases of hepatitis B and 500 HIV infections annually.<sup>6</sup> According to a study more than 2.6 million cases of HAIs occur each year in Europe, with a burden estimated in disability-adjusted -life-years (DALYs) surpassing all other reported communicable diseases.<sup>7</sup> In a meta-analysis, the burden of HAIs in Southeast Asia was reported to be 9%.<sup>8</sup> A study in Pakistan showed that the frequency of HAIs was 8.4% and the three most commonly reported infections were surgical site infections (40%), bloodstream infections (21.5%) and lower respiratory tract infections (14.6%).<sup>9</sup>

Hospital waste is a reservoir for pathogenic microorganisms and has high potential to be a source of infections. The significance of strict adherence to infection prevention and control measures can never be overemphasized. Some easy and cost-effective interventions like ensuring hand hygiene, using personal protective equipment and proper disposal of biomedical waste can lead to significant reduction in nosocomial infections.<sup>10</sup> Poor hygienic conditions, improper hospital waste disposal and inadequate training of health care workers regarding infection

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Received: 05 Nov 2021; revision received: 08 Apr 2021; accepted: 09 Apr 2021

prevention and control favour the spread of nosocomial infections.

Limited local data is available on the effectiveness of health education to improve the knowledge and practice of infection control among auxiliary healthcare staff. This study was aimed at adopting an educational strategy focusing on the change in knowledge and attitude of auxiliary staff regarding infection control practices. This will help in formulating institutional guidelines and implementing effective technical and behaviour modifying interventions for improving the infection control practices in hospitals for prevention of HAIs.

## METHODOLOGY

This study was conducted at the Inpatient departments of Fauji Foundation Hospital, Rawalpindi from August to September 2020. Approval was sought from Ethical Review Committee of Fauji Foundation Hospital (Ref No 406/ERC/FFH/RWP) and Foundation University Medical College (Ref No FF/FUMC/215-2 Phy/20).

**Inclusion Criteria:** Study participants included sanitary workers, male and female support staff (ward boys and ayas) deployed at the Inpatient departments of Fauji Foundation Hospital Rawalpindi. Staff having informal exposure to infection control practices were also included in the study.

**Exclusion Criteria:** Staff having less than 6 months service and those unwilling to participate were excluded from the study.

Sample size was determined by using WHO sample size calculator that came out to be 125. Adding 10% (12.5),<sup>11</sup> for non-response, final sample size was taken as 138. Participants were enrolled through non-probability consecutive sampling after taking the written informed consent. Hospital administration was approached for sparing auxiliary staff on the morning duty in each ward for the training session of 3 hours. Data was collected through a structured questionnaire.<sup>12,13</sup> Baseline knowledge and practice of participants were assessed through a written pre-test after which the training session was conducted. Training comprised of a lecture on infection control and practical demonstrations regarding WHO five steps of hand hygiene, safe disposal of syringes and use of gloves and masks.<sup>14,15</sup> This was followed by hands-on training. Pan flexes regarding infection control were also displayed. Written post-test was taken after one month.

Statistical Package for Social Sciences (SPSS) version 23 was used for the data analysis. Numerical variables were summarized as Mean  $\pm$  SD while categorical variables were summarized as frequency and percentages. Responses were graded according to the number of correct answers. Respondents who answered >70% of questions correctly were classified as having good knowledge of infection control.<sup>16</sup> For self-reported infection control practices, score of >70% was labelled as good practice.<sup>17</sup> Chi-square and paired sample t-test were used for inferential statistics. The *p*-value of  $\leq 0.05$  was considered statistically significant.

## RESULTS

Out of 138 participants, 70 (51%) were sanitary workers, 37 (27%) were ayas and 31 (22%) were ward boys. About 94 (68%) participants had education below matric and 62 (45%) had less than 5 years of service (Figure).

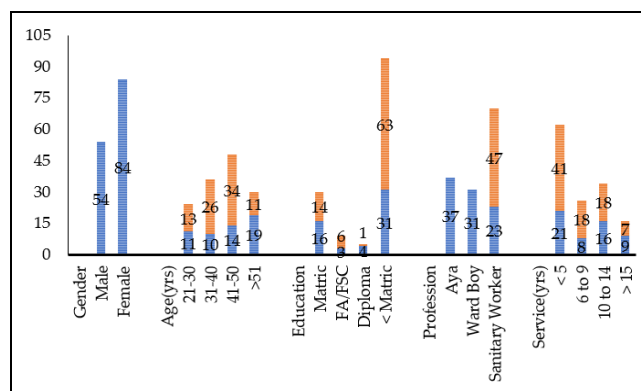


Figure: Socio-demographic data of the respondents (n=138).

Out of 111 (80%) participants reported availability of infection prevention guidelines in their department and 56 (41%) denied receiving any training for infection control previously. Only 10 (7%) participants were aware of Infection Control Committee in the hospital. Baseline Knowledge and practice score was higher in the ward support staff ( $p < 0.001$ ), staff having education above matric ( $p = 0.001$ ) and those having some degree of informal exposure to infection control practices ( $p = 0.001$ ) shown in Table-I & II.

The Training intervention brought about a significant improvement ( $p < 0.001$ ) in both the knowledge and practices in all the areas of infection control among auxiliary healthcare staff (Table-III).

**Table-I: Association of sociodemographic parameters with the Knowledge of infection control.**

Parameters	Knowledge Categories		p-value
	Good n (%)	Poor n (%)	
<b>Gender</b>			
Male	27 (19.6)	27 (19.6)	0.337
Female	35 (25.3)	49 (35.5)	
<b>Age</b>			
21-30 years	9 (6.5)	15 (10.9)	0.812
31-40 years	18 (13.0)	18 (13.0)	
41-50 years	22 (15.9)	26 (18.9)	
>50 years	13 (9.4)	17 (12.4)	
<b>Profession</b>			
Sanitary workers	9 (6.5)	61 (44.2)	<0.001
Male & Female ward support staff	53 (38.5)	15 (10.8)	
<b>Education</b>			
Below Matric	33 (23.9)	61 (44.2)	0.005
Matric	18 (13.0)	12 (8.8)	
FA/FSC	7 (5.0)	2 (1.4)	
Diploma	4 (3.0)	1 (0.7)	
<b>Years of Service</b>			
<5 years	31 (22.4)	31 (22.4)	0.584
5-9 years	12 (8.6)	14 (10)	
10-14 years	12 (8.6)	22 (15.9)	
>15 years	7 (5)	9 (6.5)	

**Table-II: Association of sociodemographic parameters with the Practices of infection control.**

Parameters	Practice Categories		p-value
	Good n (%)	Poor n (%)	
<b>Gender</b>			
Male	24 (17.4)	30 (21.8)	0.026
Female	22 (15.9)	62 (44.9)	
<b>Age</b>			
21-30 years	13 (9.4)	11 (7.9)	0.001
31-40 years	5 (3.6)	31 (22.5)	
41-50 years	12 (8.7)	36 (26.1)	
>50 years	16 (11.6)	14 (10.1)	
<b>Profession</b>			
Sanitary workers	13 (9.4)	57 (41.3)	<0.001
Male & Female ward support staff	33 (23.8)	35 (25.3)	
<b>Education</b>			
Below Matric	24 (17.4)	70 (50.7)	0.004
Matric	14 (10.2)	16 (11.6)	
FA/FSC	7 (5.0)	2 (1.5)	
Diploma	1 (0.7)	4 (2.9)	
<b>Years of Service</b>			
<5 years	17 (12.3)	45 (32.6)	0.543
5-9 years	9 (6.5)	17 (12.3)	
10-14 years	13 (9.4)	21 (15.3)	
>15 years	7 (5.1)	9 (6.5)	

**Table-III: Effect of training on the knowledge and practices of infection control among auxiliary health care workers.**

Parameters	Pre-Test	Post-Test	95% Confidence Interval	p-value
Knowledge Score (Mean ± SD)	8.22 ± 2.83	12.43 ± 2.05	3.733 ± 4.702	<0.001
Practice Score (Mean ± SD)	3.64 ± 1.39	6.11 ± 1.27	2.17 ± 2.75	<0.001

## DISCUSSION

Infection control is one of the primary building blocks for safe and effective healthcare in any facility. It includes all the procedures and policies that a healthcare facility adopts to prevent HAIs. One of the main sources of transmission of infections is the paramedical and auxiliary staff, as they remain in maximum contact with the patients.<sup>18,19</sup>

Our study revealed that a large proportion of auxiliary healthcare staff were lacking in knowledge and were not following infection control protocols. Furthermore, sanitary workers lagged behind more both in knowledge and practice as compared to ward support staff. However, the training intervention brought about significant change in all the areas of infection control.

Similar findings were reported in a study conducted by Ara *et al*, Their study highlighted that multi modal interventions addressing hand hygiene, use of PPEs and hospital waste segregation have paramount significance for improving knowledge and practice of infection control.<sup>17</sup>

A qualitative study in Vietnam showed that although the healthcare staff was aware of the significance of hand hygiene but they did not practice it as per recommended protocols. Similarly, despite of acknowledging the importance of proper disposal of healthcare waste, their waste disposal practices were unsatisfactory and they were unaware of final treatment of healthcare waste in their hospitals.<sup>18</sup>

In a study conducted in Bangladesh, Horng *et al*, reported that only 9% of healthcare workers performed recommended hand hygiene.<sup>19</sup> Another study stated that the problem of HAIs is more in developing countries as compared to developed countries; therefore, strict implementation of infection control policies is vital in these setups. Programs for improving infection control especially Hand Hygiene leads to a significant reduction in overall HAIs.<sup>20,21</sup>

Nobile *et al*, in their study emphasized that for educational programmes combining different strate-

gies like lectures, demonstrations and hands on training proved to be more effective than a single strategy alone.<sup>21</sup> As reinforcement is the key for sustained response in any programme, so continuous updating of knowledge is very importance.<sup>22</sup>

Among auxiliary healthcare staff, better knowledge and practices were observed in ward support staff, the staff having education above matric and those who had informal exposure to infection control protocols previously. The training intervention resulted in a significant improvement in their knowledge as well as practice of recommended infection control protocols.

### RECOMMENDATIONS

Strong commitment and efforts are required by all the stakeholders including Hospital administration and Hospital infection control committee to build up knowledge and improve practices of infection control in the auxiliary staff through their regular on-job and off-job training. Hospitals should also contribute to improve infection prevention practices by establishing hand washing facilities at every department, ensuring regular and continual supply of personal protective equipment and providing proper waste disposal facilities at every department. Besides implementation of existing hospital laws, continuous monitoring should also be performed to ensure adherence to infection prevention protocols.

### CONCLUSION

Training brought about significant improvement in both the knowledge and practice in all the three areas of infection control.

**Conflict of Interest:** None.

### Authors' Contribution

NK: Chief auther carrying out training programme data entry and analysis writing article, NA: Main concept of article guidance regarding article writing reviewing article, HM: Main concept of article guidance regarding article design & writing reviewing article, AI: Data analysis, AA: Data analysis.

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