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Original Research Article

Perceived Barriers to Adherence to Standard Precautions among Healthcare Personnel Working in a Teaching Hospital of Palpa District, Nepal

Chandra Kumari Garbuja,[a,d] Samikshya KC,[b,d] Mohan Singh Rana[c,e]

ABSTRACT:

Introduction: The present study aimed to find out the perceived barriers to adherence to standard precautions among healthcare personnel working in a teaching hospital of Palpa district. **Methods**: A descriptive cross-sectional study was conducted among 191 healthcare personnel in April 2019. Barriers to standard precautions adherence were evaluated using 'Factors Influencing Adherence to Standard Precautions Scale'. Mann Whitney U test and Kruskal Wallis H test were applied to examine the association of selected demographic variables: age, educational background, duration of employment, working areas and having attended trainings related to standard precautions with the perceived barriers to standard precautions adherence. **Results:** The mean age of participants was 24.87±6.05 years. Most (85.3%) of participants were nurses. 19.9% and 52.4% of participants always performed hand hygiene before and after using personal protective equipments respectively. The subscale scores obtained in leadership and culture/practice factors were 14.86±4.21 (range 0-24) and 14.59±2.60 (range 0-20) respectively. Subscale scores in judgement and contextual cues were 17.49±3.46 (range 0-20) and 18.02±5 (range 0-24) respectively. Score in justification was 7.52±5.12 (range 0-28). Age, educational background and duration of employment had statistically significant association with subscale scores on justification and perceived culture of the institution. **Conclusion**: The present study revealed that only 19.9% of the participants would perform hand hygiene before using gloves and 52.4% of participants would do it afterwards. Personal judgement, dependence on contextual cues and inadequate leadership skills were found to be the major barriers to adherence to standard precautions.

Keywords: Adherence, Barrier, Healthcare Personnel, Standard Precautions

INTRODUCTION:

Healthcare-Associated Infections (HAIs) are among the leading causes of morbidity and mortality thus contributing to extra-days of hospitalization, long term disability, financial burden and anti-microbial resistance.[1,2,3,4] HAIs do not spare even health care providers.[5]

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a - Lecturer, College of Nursing
b- Nursing Officer, Department of Internal Medicine
c-Program Co-ordinator, Community Health Department
d- Lumbini Medical College Teaching Hospital, Palpa, Nepal.
e- United Mission Hospital, Palpa, Nepal.

Corresponding Author:
Chandra Kumari Garbuja
e-mail: garbujachandra@gmail.com
ORCID: https://orcid.org/0000-0002-6540-3391

The pooled prevalence of HAIs in high-income countries and low- and middle-income countries at any given time were found to be 7.6% and 15.5% respectively.[3] As infection control measures are complex, multi-faceted and challenging process, mandatory use of standard precaution(SP) measures play a pinnacle role to control HAIs.[6] Despite the mandatory use of SP in healthcare institutions, its adherence level remained as low, in the immediate year of introduction, of 19.5% to recent figures of 57.4% in Hong Kong and 69.4% to 81% in Brazil respectively.[7]

Among 147 low- and middle-income countries, only 23 countries have functioning

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national HAIs surveillance system.[3] In Nepal, such national surveillance systems are not initiated properly. Although hospital-wise infection control manuals were formulated, most are not functioning effectively.[2,8,9] It was also observed that low knowledge about HAIs, staff shortage, lack of qualified health personnel, workload, etc are major barriers in low-income countries.[10] To minimize HAIs rate, the understanding of barriers for adherence to standard precaution among healthcare providers is very crucial. Thus, the study aimed to find out perceived barriers for adherence to standard precautions among health personnel of Lumbini Medical College and Teaching Hospital (LMCTH).

METHODS:

A descriptive cross-sectional study was conducted among 191 health personnel in LMCTH, Pravas, Palpa in April 2019. Census method was used to collect data. The healthcare personnel- staff nurse, Community Medical Assistant (CMA), Auxiliary Nurse Midwifery (ANM) and Health Assistant (HA) registered in respective professional councils with minimum of one month of working experience in LMCTH were included in the study. Those working in outpatient departments, central sterile supply department, laboratory and radiology departments, and all ward in-charges who were not directly involved in in-patient care were excluded from the study. Ethnicity of the participants was categorised as per the Government of Nepal, whereas the age and the years of experience of participants were categorised based on a study conducted in Kathmandu, Nepal. [9,11] The educational background was classified into nursing (ANM, Proficiency Certificate Level (PCL) in Nursing, B.Sc. Nursing) and paramedics (HA and CMA). The working areas were divided into non-critical areas which included cabins, emergency ward, obstetrics and gynaecology, medicine, surgical, psychiatry, paediatric and neurosurgical wards. The critical areas included intensive care units (adult, neonatal and paediatric), nursery, gynaecological post-operative ward, operation theatre and post anaesthesia care unit (PACU). A validated self-administered questionnaire (Cronbach's alpha value ranged from 0.69-0.84) was used to measure the barriers to standard precautions adherence among health personnel.[7] The questionnaire contained two parts:

a. Part I: Demographic information (9 items)
b. Part II: Perceived barriers factor (29 items) which was divided into five components as Leadership (Item no. 1-6), Justification (Item no. 7-13), Culture/Practice (Item no. 14-18), Contextual Cues (Item no. 19-24) and Judgment (Item no. 25-29)

Each of the questions demanded answers in a five-point Likert scale that ranged from '0-4' where '0'= not at all, '1'= a little, '2'= somewhat, '3'= quite a bit and '4'= very much. The items of 16 to 18 had reverse scores. Subscale score for each of the subscales was produced by adding the scores on each item of the corresponding subscale. The total score of the subscales was 116.

The questionnaire was translated in Nepali for easy understanding after consulting with a language expert. Ethical approval was obtained from the Institutional Review Board of LMCTH (IRC-LMC 013-A/019). Consent form along with the structured questionnaires were distributed to all participants through the ward in-charges. The completed questionnaires were collected over four weeks to ensure full coverage of participants. After completion of data collection, questionnaires were checked for completeness and a unique identifier was given to each questionnaire to maintain confidentiality. The master sheet in Microsoft Excel 2010 sheet was prepared, original data were entered and coded. Then, the entered data was analysed using Statistical Package for Social Sciences (SPSS™) version 16. Univariate analysis-frequency, percentage, mean and standard deviation were done to describe the demographic variables and the various barrier components. Whereas, for bivariate analysis, Mann Whitney U test and Kruskal Wallis H test were applied to find out whether the selected demographic variables- age, educational background, duration of employment, working areas and having attended trainings related to standard precautions had associations with the perceived barriers for adherence to standard precautions. The confidence interval was taken as 95% and the probability significance was set at $p<0.05$.

RESULTS:

Out of 191 participants, 177(92.7%) were females and 14(7.3%) were males with mean age of 24.87±6.05 years. More than half (52.9%) of participants were Brahmins/Chhetris, whereas 80(41.9%) and 10(5.2%) were Janajatis and Dalits respectively. Regarding educational background, 163(85.3%) were from nursing and the remaining 28(14.7%) were paramedics. The mean duration of the employment of participants was 2.90±3.53 years. More than half (51.8%) of the participants were working in non-critical areas and 92(48.2%) in critical areas. The detailed demographic variables are depicted in Table 1.

Table 1. Demographic characteristics of participants (N=191)

Demographic variables		Frequency (%)	Mean ± SD
Age, in years	18-30	158 (82.7)	24.87 ± 6.05
	31-40	22 (11.5)	
	>40	11 (5.8)	
Ethnicity	Brahmin/ Chhetri	101 (52.9)	
	Janajati	80 (41.9)	
	Dalit	10 (5.2)	
Sex	Female	177 (92.7)	
	Male	14 (7.3)	
Educational background	Nursing	163 85.3)	
	Paramedics	28 (14.7)	
Employment duration, in years	<1	56 (29.3)	2.90 ± 3.53
	1-4	97 (50.8)	
	5-9	18 (9.4)	
	≥10	20 (10.5)	
Working area	Non-critical areas	99 (51.8)	
	Critical areas	92 (48.2)	

The majority (58.6%) of the participants were unaware of the Infection Control Committee (ICC) in the hospital. And those 23(12%) participants who had ever attended training related to infection control measures attended two years back. It was found that hand hygiene was always performed by only 38(19.9%) participants before using personal protective equipments (PPE) and only 52.4% of the participants would always perform hand hygiene after using PPE.

The analysis of five independent factors: leadership, justification, organizational culture/ practice, contextual cues and judgement to measure barriers for adherence to standard precautions is depicted in table 2. The study revealed that justification factor which refers to rationalization of their non-adherence to SP is low (7.52 ± 5.12). The score in the subscale on judgement related factors was high (17.49 ± 3.46) which indicates that healthcare personnel rely on their own assessment of need to take precautions which might be outside the guidelines of infection control measures and might risk themselves as well as patients.

Table 2: Scores obtained by participants in different factors influencing adherence to stanadrd precautions (N=191)

Components	No. of items	Obtained score range	Mean ± SD
Leadership	6	0-24	14.86 ± 4.21
Justification	7	0-28	7.52 ± 5.12
Culture / Practice	5	0-20	14.59 ± 2.60
Contextual Cues	6	0-24	18.02 ± 5
Judgment	5	0-20	17.49 ± 3.46

Nearly half (48.7%) of participants did not take non-adherence to standard precautions by others as an educational opportunity. A majority (43.5%) of participants did not feel comfortable challenging their colleagues for their non-adherence. Eighty-six (45%) and 77(40.3%) of participants did not wear gloves sometimes as they thought gloves made it more difficult to palpate veins while performing venepuncture or cannulation. More than half (66.5%) of them were less likely to wear gloves as they were taught procedures without gloving and 89(46.6%) were continuing to perform procedures without gloving. More than 2/4th (78%) of participants believed that the culture of the organization allowed them not to follow SP guidelines. Sixty-five (34%) participants never wore PPE even though they saw their colleagues wearing them. Thirty-three (17.3%) participants did not wear PPEs even though they were located near patients. Also, 17(8.9%) were never careful after knowing that a patient has a blood-borne pathogen. For few (5.8%) participants, potential exposures to contaminants never triggered them to follow SP. Whereas, 13(6.8%) reported that they would not decide whether or not to use PPEs based on the clinical risks to them but would follow the guidelines. More than 2/3rd (72.3%) of participants falsely believed that they were always able to decide when to use standard precaution measures as they get more experienced at job.

Participant's age, educational background, and duration of employment were found to have statistically significant association with justification and perceived culture/practice component scores of the scale ($p<0.001$). The association between selected variables and various components of perceived barriers for adherence to SP is presented in Table 3.

DISCUSSION:

Infection control measures are a complex, multi-faceted and complex process.[12] Besides, the heterogeneity in the concepts of infection control measures among various levels of health

Table 3: Association between selected variables and factors influencing adherence to standard precautions (N=191)

Demographics		Leadership (Mean Rank)	Justification (Mean Rank)	Culture/ Practice (Mean Rank)	Contextual Cues (Mean Rank)	Judgment (Mean Rank)
Age*, in years	18-30	97.21	79.58	80.13	96.98	95.70
	31-40	88.84	169.05	165	98.80	96.59
	>40	92.95	185.73	186	76.32	99.14
	p-value	0.786	<0.001	<0.001	0.469	0.978
Educational background**	Nursing	94.60	103.13	102.85	94.36	96.06
	Paramedics	104.18	54.50	56.12	105.57	95.66
	p-value	0.395	<0.001	<0.001	0.319	0.971
Duration of employment, in years	<1	97.89	32.04	30.03	101.77	103.77
	1-4	97.87	103.25	104.68	96.01	92.34
	5-9	92.56	161.33	165	86.53	92.22
	≥10	84.72	181.15	176.55	88.32	95.40
	p-value	0.781	<0.001	<0.001	0.673	0.638
Working area:**	Non-critical	97.82	97.44	97.01	99.48	98.22
	Critical	94.04	94.45	94.91	92.25	93.61
	p-value	0.636	0.707	0.791	0.364	0.555
Attended training on SP:**	No	93.57	95.90	95.57	95.43	94.39
	Yes	113.78	96.72	99.13	100.13	107.76
	p-value	0.099	0.947	0.769	0.701	0.266

*Kruskal-Walis H Test, **Mann-Whitney U Test

personnel also pinnacles the barriers for adherence to SP measures.[1] Although the CDC guideline for Isolation precaution exists for healthcare personnel to adhere to SPs in all healthcare settings, the practices among them are still suboptimal.[13]

In the present study, the majority (92.7%) of participants were females with mean age 24.87±6.05 years. More than half (58.1%) of participants were from the non-Janajati ethnic groups even though Janajati groups have dominant habitation in Palpa district. The mean duration of employment was 2.90±3.53 years. The study revealed that 29.3% had less than one year of experience which is quite similar to the study by Pranita et al. which argued that new nurses recruitment and un-updated operational standards of the existing procedures are the barriers for non-adherence to SP.[14] More than half of the participants (58.6%) were unaware of the infection control committee which is consistent with other studies conducted in other places of Nepal.[2,15,16] The study reveals that only 12% of participants had attended training related to infection control measures which is inconsistent with the study conducted in other places of Nepal.[2,16] The reason for this inconsistency might be due to high turnover rates among healthcare personnel specially of nurses.

The CDC 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings prevails that hand hygiene is the single most important practice to reduce the transmission of infectious agents in healthcare settings. While wearing gloves, it may provide a wet and warm environment for the micro-organisms to flourish, hence hand hygiene is very essential to practice even after its removal.[17] But the present study reveals that only 19.9% and 52.4% of participants perform hand hygiene before and after using gloves respectively. The result is consistent with the study done by Pranita et al., Mitchell et al. and Kim et al.[14,16,18]

The average score of leadership factors was moderate (mean=14.86, range 0-24) suggesting that leadership and good supervision influenced adherence to SP which is consistent with the findings conducted by Bouchoucha et al.[7] However, on average the organizational culture/practice score was moderate (mean=14.59, range 6-20). The study also reported that in the majority (78%) the culture/ practice in

the workplace determined whether or not to follow strict adherence to SP guidelines. These findings were also supported by other studies done in various parts of India and Nepal.[5,16,19,20] Therefore, to overcome this barrier multi-model strategic plans like delegated leadership to provide ownership and senior frontline leadership providing resources and reinforcement for frontline healthcare personnel can help to reduce it.[21] Likewise, encouragement from scientific society, administrative and management support can also be crucial.[22,23]

The justification factor relates to the reasons for non-adherence to SP which is low (mean=7.52, range 0-23) in our study. But the participants sometimes felt clumsier to wear gloves and wanted to avoid repetition of procedure (21.5%), could not feel veins (45%) and reported to have difficulty to palpate veins while cannulation (40.3%). The result is similar to the study conducted by Akagbo et al. which demonstrated that 42% of participants were uncomfortable working with protective gear. The positive reinforcement and reward system to those who strictly follow the standard precaution measures can encourage them to adhere to SP measures.[24]

The judgement factor reflects the ability of healthcare personnel to make assessment of the situation and of the patient which might be outside the guidelines. Furthermore, those who make these judgements not only ignore patient safety but might also be linked as having some level of invincibility, i.e., they will not be at risk.[7] The findings of present study showed a high score (mean= 17.49) in the judgement component which means participants rationalize for non-adherence to SP. The study conducted by Bouchoucha et al. showed low score (mean=6.58).[7] The possible reasons might be that majority of the participants were unaware of available infection control guidelines and had not undergone any SP related trainings.

The present study also showed that educational background, and duration of employment have an impact on perceived barriers for adherence to standard precaution measures. The study conducted in northern India also showed that lack of clinical experience was one of the barriers whereas another study conducted in the western region of Nepal prevailed that lack of knowledge, forgetting, lack of time and means were the reasons for noncompliance with guidelines.[16,20]

Regarding the limitations of the study, there is possibility of some subjectivity on participants' part while answering the questions as the study was based on their self-reported information. It was evident from their varied answers to the questions on the culture of the institution. However, the utility of this study is of paramount importance as it is the first study on this critical issue in this institution.

CONCLUSION:

The present study revealed that only 19.9% of the participants performed hand hygiene before using gloves and 52.4% of participants did it after using gloves. Personal judgement, dependence on contextual cues and inadequate leadership skills were found to be the major barriers to standard precautions adherence. Educational and behaviour modification packages and reinforcement or reward systems for frontline health care personnel can therefore help improve adherence to standard precautions.

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Conflict of Interest:

The authors declare that no competing interests exist.

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