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Hand hygiene compliance among rural healthcare workers of Nepal

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ABSTRACT

Introductions: Transmission of healthcare associated infections through contaminated hands of healthcare workers are common. This study was designed to explore the existing compliance of hand hygiene among the healthcare workers workings in different level of health care centers of Makwanpur district of Nepal.

Methods: This was a cross sectional observational study conducted in Makwanpur district, Nepal, during 2015. Healthcare workers from nine healthcare centers were selected randomly for the study. Standard observation checklists and World Health Organization guidelines on hand hygiene were used to assess the compliance of hand hygiene during patient care.

Results: There were 74 participants. Overall compliance for hand washing was 24.25% (range 19.63 to 45.56). Complete steps of hand washing were performed by 38.3% of health care workers. The factors associated for noncompliance were lack of time (29.3%), example set by seniors (20%), absence or inadequate institution protocol (20%) and unfavourable health care setting (> 20%).

Conclusions: Overall hand washing compliance rate amongst the healthcare workers in rural health facilities of Nepal were low (24.25%).

Keywords: hand hygiene, healthcare worker, rural health facilities

INTRODUCTIONS

Healthcare centers are a source of infection to the patients.[1,2] These infections lead to increased anti–microbial resistance and more serious illness.[3,4] Moreover, it is also a concern for healthcare workers (HCWs) involved in patient care who are working in resource poor and high-risk settings of rural Nepal.

Improvement of hand hygiene (HH) practices has been linked to reduce transmission of health care associate pathogens and reduce transmission rate.[5-7] The spread of healthcare associated infections (HCAIs) can be controlled if health workers wash their hands properly at appropriate times with soap and water.[8-10]

However, majority of the studies are either based on urban tertiary healthcare centers or based on interviews rather than direct observation. Thus, this research was done to observe HH compliance by HCWs during routine patient care and explore factors associated with adherence or non-adherence to recommended HH practice.

METHODS

Makwanpur is one of the six districts selected by Patan Academy of Health Sciences (PAHS) for community based teaching and learning activities for the undergraduate medical students and was considered for this study. This is a cross sectional study which was conducted in 2015 among 74 HCWs from nine health facilities which were part of district health system. The health facilities included in this study represent every category of the rural health-care settings available in Makwanpur ranging from former Sub-Health Post (SHP) which are now upgraded to health post, Health Post (HP), Primary Health Care Centers (PHCC) to district hospital (DH).

All the HCWs from DH and at least two health facilities of each category were randomly selected through non-probability sampling.

The HCWs who were in direct contact with patients or their body fluids were considered as sampling units for this study. An observation checklist developed by Centre for Disease Control and Prevention, USA (CDC), and WHO's 'My five moments for HH'[11] were used to assess HH compliance. To avoid bias and address the hawthorn effect, covert observation method was followed. The HCWs were directly observed by a member of the research team during the routine patient care for one full office hour and compliance or failure to comply with hand washing was recorded. The compliance was calculated using formula: Compliance (%) = (Performed HH actions/required HH actions) X 100.[11] Following the observation, an in-depth interview (IDI) was conducted with each health care worker to explore the factors responsible for adherence or non-adherence with HH. Before the end of an interview, each participant was provided with soap and requested to demonstrate the HH technique. The hand washing steps were thoroughly observed and marked in the observation checklist.[1]

Observation checklist was analyzed using descriptive statistics while the information obtained from IDI was manually analyzed using thematic content analysis.

Ethical approval for the study was obtained from Institutional Review Committee of Patan Academy of Health Sciences. Interview was carried out after obtaining informed verbal consent from the respondents. Confidentiality and anonymity was assured and maintained.

RESULTS

Out of 301 observations, compliance of HH was 24.25% (73/301), (Table 1).

Table 1. Hand Hygiene (HH) compliance of healthcare workers (HCWs) in different healthcare facilities of Makwanpur district, Nepal.

Health Facilities	Total Opportunities	HH performed	HH Compliance
Former Sub Health Post*	9	2	22.2%
Health Post	37	6	16.2%
Primary Health Care Centre	45	23	51.1%
Former District Hospital	210	42	20.0%
Overall	301	73	24.25%

*now restructured and upgraded to Health Post, HH- hand hygiene

Table 2. Department/Unit wise distribution of HH compliance in Makwanpur district, Nepal.

Procedure	Total Opportunities	HH Performed	HH Compliance
In patient	90	24	23.3%
Minor OT/Dressing	66	24	36.36%
Laboratory	09	07	77.78%
OPD	16	8	50.00%
Emergency	120	13	10.83%
Total	301	73	24.25%

Table 3. HCWs' skills on appropriate HH technique[1]

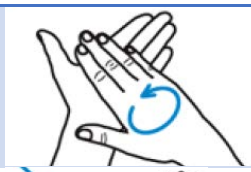
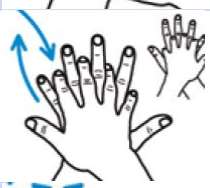
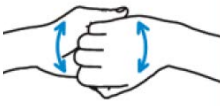
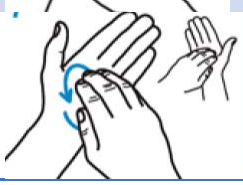
Step	Action		Performed (%)
1	Wet hands with water, apply enough soap to cover all hand surface and rub palm to palm		81.10
2	Right palms over left dorsum with interlaced finger and vice versa		80.00
3	Palm to palm with fingers interlaced		91.70
4	Back of fingers to opposing palms with fingers interlocked		61.70
5	Rotational rubbing of each thumb by clasping and rotating in the palm of the opposite hand		60.00
6	Rotational backwards and forwards with clasped finger of right hand in left palm and vice versa		38.30

Table 4. Self-reported factors by HCWs contributing for poor adherence with HH compliance

Factors	Rank								
	1	2	3	4	5	6	7	8	9
Professional Category (%)	13.43	8.96	11.94	10.45	7.46	7.46	13.43	5.97	20.9
Medical Specialty (%)	3.08	12.31	10.77	9.23	12.31	7.69	7.69	24.62	12.31
Workload / Perception of lack of time (%)	29.23	16.92	9.23	15.38	4.62	4.62	3.08	9.23	7.69
Training on infection control (%)	16.92	16.92	7.69	9.23	9.23	3.08	15.38	13.85	7.69
Limited access to hand washing facilities (%)	21.54	9.23	13.85	10.77	12.31	16.92	4.62	3.08	7.69
Unfavourable healthcare settings (%)	3.08	21.54	20.00	21.54	6.15	15.38	3.08	4.62	4.62
Inspired from seniors (%)	1.54	1.54	12.31	7.69	20.00	20.00	15.38	7.69	13.85
Hawthorne Effect (%)	3.03	10.61	3.03	12.12	15.15	9.09	16.67	18.18	12.12
Absence or inadequate institutional protocol (%)	6.15	3.08	10.77	4.62	16.92	13.85	20.00	15.38	9.23

The compliance rate was 77.78% among the laboratory personnel while it was only 10.8% among the HCWs working in the emergency department, (Table 2).

More than one thirds (38.3%), of the surveyed HCWs missed to perform complete steps[1] of hand washing process during demonstration of skills. After hand wash, 45% of the HCW dried their hand thoroughly with a single use towel, (Table 3).

Lack of time (29.23%, rank 1), unfavorable health care settings (> 20 %, rank 2,3,4), example set by seniors (20%, rank 5 and 6) and absence or inadequate institution protocol (20%, rank 7) were reported factors for poor adherence to HH, (Table 4).

DISCUSSIONS

Our study found low compliance of HH among HCWs working in rural healthcare settings of Makwanpur districts of Nepal. This study revealed that only one-quarter (24.25%) of complied with HH, which is lower than findings from similar study done in Sri Lanka where, the compliance rate was 40%.[12]

The current study revealed highest (51.1%) compliance of hand washing among health workers at PHCC and lowest (16.2%) at HP. Higher HH compliance rates in PHCC may be due to the manageable workload with supportive infrastructure facilities while one of the reasons for low compliance at HP could be lack of easily accessible handwashing facilities.

The study further revealed that compliance rate was least among HCWs working in relatively high-risk areas such as emergency department whereas health professionals working in the laboratory were found to be highly compliant. Laboratory personnel may be more vigilant due to their workplace setting while emergency department is mostly swamped with patients in high number along with critically ill patients. Thus, the department HCWs might have overlooked the compliance of HH. Even in minor OT while performing clinical procedure like wound dressing, more than one-third of the times, health workers missed to keep their hands clean.

Not only the compliance but also following an appropriate way of HH is equally important. Most of the HCWs surveyed were well aware of the first step of the World Health Organization recommended guideline for hand washing i.e. “rub palm to palm.” However, half of them were unacquainted of all of the handwashing steps recommended by the guidelines. In fact, more than 60% of them missed to demonstrate one of the crucial steps during hand washing, the “rotation backwards and forwards with clasped finger”, leaving significant hand areas

unwashed effectively. These findings were similar to a study conducted by Fernandez et al., in 2015, which revealed that HCWs had knowledge deficits on one or more components of HH steps.[13]

As microorganisms thrive in a damp environment, keeping hand dry is as important as hand washing in maintaining HH and preventing cross infection.[14] However, in our study more than half of HCWs missed to dry their hand after hand wash which supports the similar finding of H. Lyle's research work conducted in Nigeria in 1997.[15] One of the reason for such practice was lack of adequate clean towels and staffs had to share them.

The HCWs ranked several reasons influencing their non-compliance of HH. Among which, perception of lack of time due to heavy workload and limited access to hand washing facilities were major concerns. Our study highlights the need for a rigorous, comprehensive, and regular in-service education, orientation and training sessions on HH among rural HCWs in the districts.

Since the middle of nineteenth century, HH has been considered as one of the most important measures for reducing transmission of microorganisms and preventing infection. The studies carried out by Semmelweiss in 1861 and numerous others since then have demonstrated the possibility to transmit infectious diseases via the hands of healthcare workers.[3,4] Also, good HH can prevent transmission of pathogens and decrease the frequency of healthcare associated infections.[8]

There were few limitations of this study. Some of the eligible respondents who were not physically present on the day of survey, due to their official or personal reason(s), could not be included in the study. Also, as the study sites were purposively selected, external validity of the study findings is low.

CONCLUSIONS

The overall hand washing compliance rate amongst rural health care workers (HCWs) in district health facilities in this study was low at 24.25%. This rate varied according to type of health facility and department of HCWs. Lack of time was reported as the most important factor responsible for poor adherence to hand hygiene (HH).

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CONFLICT OF INTERESTS

Authors declare no conflict of interests.

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