Short Communication

Awareness of the Use of Standard Precautions during Care of People Living with HIV by Ward Attendants in Indian Hospitals

Ryan Fernandez, Tony D. S. Raj, Elsa Heylen[1], Laura Nyblade[2], Dhinagaran Devadass, Krishnamachari Srinivasan[3], Maria L. Ekstrand[1,3]

Division of Medical Informatics, St. John's Research Institute, St. John's Medical College, [3]Division of Mental Health and Neurosciences, St. John's Research Institute, St. John's Medical College, Bengaluru, India, [1]Department of Medicine, Center for AIDS Prevention Studies, University of California, San Francisco, CA, [2]Global Health Division, International Development Group, RTI International, Washington, DC, USA

Abstract

Context: Standard precautions (SP) are infection prevention practices universally used during patient care to lower infection transmission. **Aims:** The aim of the study was to (1) assess Indian ward attendants' (WAs) knowledge, perceived efficacy, and self-efficacy regarding SP and (2) examine correlates of SP self-efficacy and intent to use unnecessary precautions during care of people living with HIV. **Subjects and Methods:** Data are sourced from a face-to-face baseline survey of a stigma-reduction trial among 1859 WAs from Indian hospitals. Percentages were used to describe categorical variables means and standard deviations for continuous variables. Multiple regressions examined associations between measures. **Results:** WAs who had heard of SP had 44% higher odds of confidently using SP than those who had not heard of them. Those aware of universal SP use were 43% more likely to feel confident in using SP but also reported greater intent to use unnecessary precautions. **Conclusions:** Hospitals could implement SP training for WAs, as their knowledge of universal use was lacking.

Keywords: Self-efficacy, standard precaution, ward attendants

Introduction

Standard precautions (SP) are infection control practices used with all patients (universally).[1] This includes using personal protective equipment (such as gloves, goggles, and masks) and handwashing before/after touching patients or patient material.[2] All hospital staff including ward attendants (WAs) should have adequate knowledge and skills to implement SP, universally.[2]

Stigma is a behavior resulting in a person who possess a particular characteristic (such as an HIV diagnosis) to be discredited.[3] It can be driven by lack of knowledge, fear of getting infected from contact, blame, fear of social ramifications, etc.[4-6] Among health-care workers (HCWs), it can be expressed as taking unnecessary precautions when caring for a person with the stigmatized condition.[4,5,7]

Prevalence of stigma against people living with HIV (PLWH) among HCWs has been well-documented.[8-10] In low- and middle-income countries (LMICs), poor knowledge of how to use SP correctly can cause fear among HCWs when caring for PLWH.[8,11] This leads to delay in care-seeking by PLWH themselves and differential treatment or denial of care for PLWH by the HCW.[9,10] Stigmatizing practices in health-care settings specific for PLWH include double gloving, burning patient linens, and charging additionally for linen and extra gloves.[8]

In this paper, we examine the use of SP by WAs in Indian hospitals. They are housekeeping hospital staff who assist in patient care duties such as washing items, transporting patients, and changing linens. WAs usually have minimal education and minimal job training.[12] In a study in Ghana (which included 22% WAs), SP knowledge was poor, and WAs lacked understanding of hand hygiene importance and PPE use.[13] In a large Indian study, WAs more frequently showed negative attitudes than nurses and doctors.[14] They more often

Access this article online

Quick Response Code:

Website: www.ijcm.org.in

DOI: 10.4103/ijcm.ijcm_1339_21

Address for correspondence: Dr. Ryan Fernandez, Division of Medical Informatics, St. John's Research Institute, St. John's Medical College, Koramangala, Bengaluru - 560 034, Karnataka, India. E-mail: ryan@sjri.res.in

How to cite this article: Fernandez R, S. Raj TD, Heylen E, Nyblade L, Devadass D, Srinivasan K, *et al*. Awareness of the use of standard precautions during care of people living with HIV by ward attendants in Indian hospitals. Indian J Community Med 2022;47:142-6.

Received: 28-10-21, **Accepted:** 12-02-22, **Published:** 16-03-22

used unnecessary precautions with PLWH.[15] Hence, there is a need to study this group and develop training programs to implement SP.

The current paper (1) assesses Indian WAs' knowledge, perceived efficacy, and self-efficacy regarding SP and (2) examines the correlates of SP self-efficacy and intent to use unnecessary precautions (such as double gloving) when caring for PLWH.

Subjects and Methods

Settings

The data are sourced from the baseline survey of a cluster-randomized controlled trial of a stigma-reduction intervention among WAs.[12,11] It was conducted in two Indian states having a high HIV prevalence.[16] The methodology for this trial has been published previously.[12]

Subjects

The participants were consenting WAs (n = 1859), at least 18-year-old, and with at least 1-year experience, recruited from September 2014 to December 2017, from 34 hospitals in four Indian cities. After obtaining permission from the hospital, written consent was taken. Face-to-face interviews (~40 min) were conducted by the interviewer in a private space at the hospital, using a tablet computer, in the participant's preferred language (Hindi, English, or Kannada).

Measures

Demographic characteristics included age, gender, work experience, and availability of postexposure prophylaxis (PEP) drugs in their hospital "0"-*No*, "1"– *Yes*, or "2"-*Haven't heard of* that/*Don't know what PEP is*).

The participants were asked about the frequency of performing seven routine ward-specific activities, and responses were captured ranging from "0" (*Never*) to "3" (*Often).*

To assess knowledge of SP, participants were first asked if they heard of SP and their responses were captured as "0" (*No*) or "1" (*Yes*). They were then asked to identify specific SP measures from a list of nine. A dichotomous variable was constructed and scored "1" if the participants identified all the SP correctly, and "0," otherwise. In addition, they were asked for other measures (recorded as open answers).

For assessing the importance of SP universal use, the participants were asked how important it is for HCWs to use SP with patients with five different infections, and responses ranged from "1" (*Not at all important*) to "4" (*Very important*). A dichotomous variable was created that was scored "1" if the respondent correctly answered that SP were "*Very important*" for all five types and was scored "0" otherwise.

Perceived response-efficacy is the perception that if SP is used correctly, they will effectively prevent infection transmission and protect HCWs.[17,18] The participants were asked how certain they were that each of seven SP, if used when caring for a PLWH, would prevent HIV transmission. The responses ranged from "1" (*Very uncertain*) to "5" (*Very certain*), the number of "*Very certain*" responses were summed to create an index ranging from "0" to "7."

Perceived self-efficacy is the confidence in one's ability to correctly use SP.[17,18] The participants were asked about their confidence levels while performing three professional tasks. The response options ranged from "0" (*I definitely cannot*) to "4" (*I definitely can*), and a dichotomous variable was created with a score of "1" if respondents chose "*I definitely can*" for all three items, or "0" otherwise.

To determine the intent to use unnecessary precautions, the participants were asked what they would do in four tasks with low risk of fluid exposure (such as assisting a patient with his personal hygiene needs), and three tasks with highrisk of fluid exposure (such as cleaning up a patient's body fluids and contaminated linen), involving PLWH. The number of tasks for which they would perform the task with unnecessary precautions (e.g., double gloving) was summed up separately.

Analysis

Frequencies and percentages were used for categorical variables to describe the sample. For continuous variables, means and standard deviations were used. Multiple regression analysis was used to examine the associations of the covariates SP knowledge, belief in SP response-efficacy, and frequency of performing tasks with exposure to body fluids, with three outcomes: SP self-efficacy, the intent to use unnecessary precautions in low- and in high-risk fluid-exposure tasks. Logistic regression was used for the dichotomous outcome of SP self-efficacy. The other two outcomes were count variables and analyzed through *Poisson* regression. We controlled for age, gender, and education, which were significantly bivariately associated with the outcomes. In addition, we included the first outcome, self-efficacy, as a predictor in both *Poisson* models. Model assumptions were checked to look for evidence of multicollinearity or overdispersion of the count outcomes.

All significance tests are two sided, and a $P < 0.05$ was considered significant. Descriptive analyses were conducted in SPSS version 25 (IBM, Armonk, New York, United States) and regressions in Stata version 15 (StataCorp LLC, College Station, Texas, United States).

Ethics

The main study (ClinicalTrials.Gov Identifier: NCT02101697) was approved by the Institutional Ethics Committee, St. John's Medical College, Bangalore, with approval number 172/2011, and the Committee on Human Research, University of California, San Francisco with approval number 10-05026.

Results

Demographics are shown in Table 1. The participants were from private for-profit hospitals (41%), government hospitals (28%), and nonprofit hospitals (32%). They were 65% female, and almost half were under 40 years.

Table 1: Demographic characteristics of the ward attendants (*n*=1859)

Item	Frequency, *n* (%)
Type of hospital	
Private, profit	752 (40.5)
Private, nonprofit (religious)	590 (31.7)
Government	517 (27.8)
Gender	
Female	1209 (65.0)
Male	650 (35.0)
Religion	
Hindu	1556 (83.7)
Christian	239 (12.9)
Other	64 (3.4)
Marital status	
Married	1312 (70.6)
Previously married	325 (17.5)
Single	222 (11.9)
Education (years)	
≤4	383 (20.6)
5-7	412 (22.2)
8-10	823 (44.3)
Above 10	241 (13.0)
Monthly household income in Indian Rupees	
≤10,000	627 (33.7)
10,001-20,000	767 (41.3)
>20,000	465 (25.0)
Age (years)	
18-29	323 (17.4)
30-39	552 (29.7)
40-49	666 (35.8)
≥50	317 (17.1)
Engagement in professional activities (Sometimes/often)	
Assisting in transporting patients	1772 (95.3)
Preparing room for next patient	1723 (92.7)
Contact with medical/bio-hazardous waste	1640 (88.2)
Touching patients	1430 (76.9)
Assisting patients with personal hygiene	1557 (83.8)
Handling bed pans	1470 (79.1)
Dispensing food or water	1382 (74.3)
Perception of availability of (PEP) in the hospital	
Private, for-profit	405/752 (53.9)
Private, nonprofit/religious	278/590 (47.1)
Government	171/517 (33.1)

PEP: Postexposure prophylaxis

As shown in Table 2, although 86% of WAs in Indian hospitals had heard of SP, only 61% knew they were to be used universally. The "mean" response-efficacy score, i.e., the mean number of SP that respondents felt "*Very certain*" would prevent HIV infection, was 4.9 out of seven, and 64.7% expressed self-efficacy on all items. The percentage endorsement for the individual items is listed in Table 2. The WAs expressed an intent to use unnecessary precautions in 3.0 out of four low-risk tasks and 2.5 out of three high-risk tasks.

Table 2: Knowledge of standard precautions (*n*=1859)

Item	Frequency, *n* (%)
Heard of SP	1594 (85.8)
Identified all SP correctly	1506 (81.0)
Aware SP "*Very important*" with all types of patients	1136 (61.1)
Response-efficacy: Very certain SP will prevent HIV infection	
Disposing of sharp objects in special container	1489 (80.1)
Separating medical/infectious waste	1413 (76.0)
Sterilizing instruments after use	1365 (73.4)
Disinfecting bloody linen w/bleach	1382 (74.3)
Using disposable syringes	1356 (72.9)
Single gloves, apron, shoes to clean up blood	1153 (62.0)
Single gloves for bathing patient with no open wounds	995 (53.5)
Self-efficacy: I definitely can	
Touch PLWH without worrying about infection	1378 (74.1)
Bathe PLWH without fear of infection	1399 (75.3)
Change soiled linens of PLWH without fear of infection	1489 (80.1)
All three above	1202 (64.7)
SP response-efficacy, mean (SD)	4.9 (2.1)
Intent to use unnecessary precautions[a], index, mean (SD)	
High-risk tasks (0-3)	2.5 (0.9)
Low-risk tasks (0-4)	3 (1.4)

[a]Unnecessary precautions: Precautions not necessary and are not part of SP. SP: Standard precaution, SD: Standard deviation, PLWH: People living with HIV

The multiple regression results for the outcomes of SP self-efficacy and the intent to use unnecessary precautions are presented in Table 3. Was, who heard of SP, on average had 44% higher odds of self-efficacy regarding SP (adjusted odds ratio or "AOR" of 1.44; 95% confidence interval [CI] [1.08–1.93]) than those who had not heard of them. Was, who were aware that it was "*Very important*" to use SP universally, were on average 43% (AOR 1.43; 95% CI [1.15–1.76]) more likely to say that they "*Definitely could"* do all three self-efficacy items, compared to WAs who were less aware. Response-efficacy was also positively related to self-efficacy. The greater the number of SP that WAs felt were "*Very certain*" to prevent HIV transmission, the higher the odds of SP self-efficacy (AOR 1.23; 95% CI [1.17–1.30]).

Regarding intent to discriminate, for those WAs who were aware that it was "*Very important"* to use SP universally, the expected number of low-risk tasks, in which they used unnecessary precautions was on average 17% (incidence rate ratio [IRR] 1.17; 95% CI [1.11–1.24]) higher than for those less aware of the importance of universal SP use. For high-risk tasks, it was on average 10% higher (IRR 1.10; 95% CI [1.03–1.17]).

Discussion

This study conducted among WAs in Indian hospitals found that, although 86% of WAs had heard of SP, only 61% knew they were to be used universally. This finding is in accordance

Table 3: Multiple regression - standard precautions self-efficacy and intent to use unnecessary precautions (*n*=1859)

Item	SP self-efficacy ("*Definitely can*" all 3), AOR (95% CI)	Intent unnecessary precautions high-risk, IRR (95% CI)	Intent unnecessary precautions low-risk, IRR (95% CI)
Heard of SP	1.44 (1.08-1.93)*	1.05 (0.96-1.14)	1.05 (0.97-1.14)
Identified all SP	1.24 (0.96-1.60)	1.06 (0.98-1.14)	1.05 (0.98-1.12)
Aware SP "*Very important*" with all patients	1.43 (1.15-1.76)***	1.10 (1.03-1.17)**	1.17 (1.11-1.24)***
Response-efficacy (number that endorsed "*Very certain*" prevent HIV)	1.23 (1.17-1.30)***	1.00 (0.99-1.01)	1.00 (0.98-1.01)
Frequency of performing high-risk tasks	1.05 (0.87-1.25)	0.98 (0.94-1.03)	
Frequency of performing low-risk tasks	1.50 (1.18-1.85)***		0.95 (0.90-0.997)*
Self-efficacy SP		0.96 (0.90-1.02)	0.95 (0.89-1.00)†

*P≤05, **P≤01, ***P≤001, †P≤10. The models have been controlled for age, gender, and education. CI: Confidence interval, AOR: Adjusted odds ratio, IRR: Incidence rate ratio, SP: Standard precaution

with an earlier Indian study that found that WAs more often used SP when attending to PLWH, than other patients.[19] Those aware of the universal use in our study reported greater confidence in their ability to use SP. However, they were also more likely to use unnecessary precautions while caring for PLWH. The WAs who were more confident that correctly used SP can prevent HIV transmission, also demonstrated greater confidence in their ability to use SP while caring for PLWH.

WAs aware that it is "*Very important*" to use SP universally were more likely to feel confident that they could touch, bathe, and change soiled linens of PLWH without getting infected. This is consistent with the findings of a study conducted among HCWs in another LMIC that found a positive association between SP compliance, self-efficacy, and perceived benefits.[20] It is likely that higher perceived self-efficacy leads a person to practice SP in more situations, though the reverse is also possible (greater compliance with SP may mean that one practices them more often, resulting in an increase in self-efficacy).

WAs aware that SP should be used universally, also showed a greater intent to use unnecessary precautions. This is consistent with another study that showed the use of unnecessary precautions increased after an intervention aimed at reducing stigma and resulted in patients being treated differently.[19,4]

This study had few limitations. It was a cross-sectional analysis, so conclusions cannot be drawn regarding causality. While the study recruited participants from different hospitals, they were all in (peri-) urban areas. We assessed intent, based on self-report, rather than observing behavior. However, our findings confirm previous findings that WAs in LMICs are less likely to receive SP training compared to other health-care professions.[21] SP training of HCWs in public health settings is often inadequate.[22] These programs need to teach WA the importance of using SP, and the harmful effects of using unnecessary precautions that do not provide additional protection, waste resources, and appear stigmatizing when used for PLWH only. Proper and universal use of SP reduces infection risk, prevents PLWH stigmatization, and improves treatment adherence.[11]

Conclusions

SP awareness was high, but awareness of their universal application was low in WAs. Indian hospitals need to adopt more SP job training and supervision for WAs.

Financial support and sponsorship

This research paper utilizes data from the research study titled "Reducing AIDS Stigma among Health Professionals in India." This study was funded by the US National Institute of Mental Health, National Institutes of Health, Grant Number 5R01MH09325702 (ML Ekstrand, PI).

Conflicts of interest

There are no conflicts of interest.

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