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Research paper

Evaluation of infection prevention and control preparedness in acute care nurses: Factors influencing adherence to standard precautions

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Abstract *Background:* It is essential to identify factors that affect adherence to standard precautions, which could increase risk of occupational exposure to pathogens.
Methods: A descriptive cross-sectional study was conducted. Nurses (n = 241) in an acute care hospital completed the survey including the Factors Influencing Adherence to Standard Precautions Scale (FIASPS) (total possible scores in each domain ranged from 5 to 25) and the Compliance with Standard Precautions Scale (CSPS) (total possible scores ranged from 0 to 20).
Results: Results showed moderate influence of the judgement (mean = 14.04, SD = 4.04), leadership (M = 14.58, SD 3.78), and culture/practice (M = 12.61, SD = 3.18) factors; high score on contextual cues (M = 15.77, SD = 3.60); and low score on justification (M = 5.76, SD = 4.57). The overall mean CSPS score was 76.68% (SD 13.82). There was a significant negative relationship between justification for non-use of standard precautions and nurses' adherence with standard precautions ($r = -0.24$, $p < 0.001$). A significant positive relationship was reported between the leadership factor ($r = 0.25$, $p < 0.001$), cultural practice factor in FIASPS ($r = 0.24$, $p < 0.001$) and nurse' adherence with standard precautions.
Conclusion: Nurses would benefit from regular training sessions to reiterate the infection control guidelines and the need to abide to them. Encouraging nurses to be role models serves to increase the adherence to SPs in their colleagues. Organization should continue with strict enforcement of policies with monitoring.

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Highlights

- Poor adherence to standard precautions increases the risk of exposure to infections.
- Regular training sessions can improve perception of risks of non-adherence.
- Nurses can be encouraged to be role models in the practice of standard precautions.
- Enforcement of policies is crucial to maintain adherence to standard precautions.

Introduction

Standard precautions (SP) are the foundation guidelines within the infection prevention and control practice in protecting health care workers and patients alike against cross-transmission of microorganisms [1]. Despite the clear establishment of infection prevention and control policies and procedures in the hospital setting, health care workers' adherence to SP remains suboptimal. Poor adherence to SP among health care workers, including nurses has been reported in various studies [1—4]. SP include hand washing, use of adequate personal protective equipment (PPE) (gloves, gown, cap, eye cover and mask), providing care with devices, medical equipment and clothing used during patient care, environmental regulation (surface cleaning guidelines and waste disposal) and appropriate disposal of used sharps [5]. Indisputably, being the frontline of healthcare, health care workers play a critical role in delivering high quality care to patients, especially at times of the global pandemic of coronavirus disease 2019 (COVID-19) with particularly high risk of transmission [6]. It is of high priority to determine and understand the behaviours and adherence to infection prevention and control practices, to evaluate the preparedness of health care workers in the current pandemic context [1,7].

The Compliance with Standard Precautions Scale (CSPS) was developed to provide a quantified assessment on the adherence to SP among nurses [8]. Health care workers need to prioritize and adhere to the stringent practices of infection prevention and control for the safety of patients and themselves. Adherence to SP is influenced by multiple factors, including sufficient knowledge, availability of PPE, workload, time, confidence in own clinical skills and organisational related [9—11]. The Factors Influencing Adherence to Standard Precautions Scale (FIASPS) was developed to systematically determine the influence of judgement, leadership, culture/practice, contextual cues, and justification on the adherence to SP among the health care workers [12].

The findings from this study would be beneficial to determine the preparedness of our nurses in the current pandemic context from the adherence and behaviours in their daily infection and control practices. This will aid in the improvement of current infection control practices with increased adherence to safe practices to achieve the protection and safety of the nurses in this pandemic outbreak.

Methods

Aim

To evaluate the factors influencing adherence to SP and quantify adherence among nurses in an acute care setting using validated instruments.

Setting and design

A descriptive cross-sectional study was adopted in this study.

Data collection

Data were collected using an online survey conducted among nurses in an acute care tertiary public hospital in Singapore from August 2019 to October 2019. A population-based sampling approach was employed. Ethics approval was obtained from the institution review board. All staff nurses and enrolled nurses who are working full-time in the inpatient wards of the hospital with work experience of at least one year or more were eligible and invited to participate in this study. All staff nurses in Singapore have at least a diploma qualification, while enrolled nurses had received vocational training and assist the staff nurses in patient care. The wards included medical, surgical, intensive care area, intensive care unit, high-dependency, and isolation wards. Demographic information including age, gender, ward discipline, job designation and the number of years of working experience was gathered.

Measures

The FIASPS consists of 25 items with five domains including judgement, leadership, contextual cues, culture/practice and justification [12] (See Supplementary material Table S1). The scores are calculated to create a total score for each subscale, with the total possible scores in each domain ranged from 5 to 25 ($\leq$10 = low score, 11 to 15 = moderate score, and $\geq$16 = high score) [12]. The FIASPS reported satisfactory psychometric properties in terms of reliabilities (Cronbach's alpha = 0.61 to 0.85) and stability for use [12].

The CSPS consists of 20 items, comprising of five aspects relating to the use of protective devices, disposal of sharp instruments and waste, decontamination of spills and used equipment and prevention of cross-infection transmission

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[1] (See Supplementary material Table S1). The CSPS was developed to align with the SPs guidelines recommended by the World Health Organisation [8,13]. The total possible scores of the CSPS ranged from 0 to 20, with a higher rating indicating a higher compliance rate with the practice of SP. Previous testing reported acceptable reliability (Cronbach's alpha = 0.73) and validity (content validity index 0.90) [8].

Data analysis

Data were entered, and analyzed, using SPSS version 25.0 (SPSS Inc., Chicago, IL, USA). Cross-checks were carried out by another study team member to enhance the accuracy of data in the SPSS software [14]. Descriptive statistics, including the mean, standard deviation, frequency, and percentage, were used to describe the demographic data, compliance rate and factors influencing adherence to standard precautions.

Cronbach's α was calculated to determine the internal consistency of the FIASPS. Stability of the factor structure of the FIASPS was explored using the confirmatory factor analysis (CFA) for each of the sub-scales. Construct validity was evaluated using the Pearson product—moment correlation coefficient to examine the correlation between the identified factors that influence nurses' adherence to SPs and their compliance rate in the practice of SPs. The level of significance was set at 0.05, so p-values $\alpha = 0.05$ were reported as statistically significant.

Results

A total of 241 nurses responded to the survey. The participants' demographics data are shown in Table 1. Majority of the participants were below 30 years old (55.6%) and female (84.6%). Most were staff nurses (81.3%) and had clinical experience of 7 years and above (51.4%). A total number of 206 nurses (85.5%%) were working in the general medical and surgical wards.

Compliance with standard precautions

The overall compliance rate in the sample was 76.68% (SD 13.82), with significant higher compliance rate reported by the critical care nurses (mean 81.71%, SD 8.40) as compared to the general ward nurses (mean 75.83%, SD 14.38) and ($p = 0.02$) (Table 1). The compliance rate of the five aspects of CSPS include: (i) use of protective devices (65.49%—96.27%); (ii) disposal of sharp instruments (3.32%—97.1%); (iii) disposal of waste (84.23%); (iv) decontamination of spills and used equipment (81.33%—85.89%); (v) prevention of cross-infection transmission (31.95%—92.95%) (Table 2).

Adherence to standard precautions

The total possible scores in each domain of the FIASPS ranged from 5 to 25. Results demonstrated moderate score on judgement ($M = 14.04$, SD = 4.04), moderate score on leadership ($M = 14.58$, SD 3.78), moderate score on cultural and practice ($M = 12.61$, SD = 3.18), high score on contextual cues ($M = 15.77$, SD = 3.60) and low score on justification ($M = 5.76$, SD = 4.57) (Table 3).

Validity

CFA was conducted using original 5-factor, however first order model did not show the best fit: Chi indep (300) = 1815.34, $p < 0.001$ (Table 4). Internal reliability indicated acceptable reliability for all factors except culture/practice, with reliability improving to 0.60 with the removal of items 4 (People interpret standard precaution guidelines differently) and 24 (Most doctors typically adhere to standard precautions). A Cronbach's alpha coefficient of greater than 0.60 can be considered as satisfactory internal consistency [15]. The five factors of the FIASPS, namely justification, leadership, contextual cues, cultural/practice and judgement have α of 0.76, 0.78, 0.62, 0.60 and 0.67, respectively (Table 3). CFA was re-conducted again, demonstrating an improved fit with the $\chi 2$ ($\chi 2$ indep (300) = 537.35.24, $p < 0.001$) and the goodness-of-fit indices supporting the fit of the data to the five-factor structure (Table 4).

There was a significant negative relationship between the justification factor in FIASPS and nurses' compliance with standard precautions ($r = -0.24$, $p < 0.001$) (Table 5). At the same time, a significant positive relationship between the leadership factor ($r = 0.25$, $p < 0.001$), cultural practice factor in FIASPS ($r = 0.24$, $p < 0.001$) and nurse' compliance with SPs.

Discussion

Preparation and protection of the health care workers are part of the active management in reducing transmissibility of infectious diseases. This study was timely, in the sense that it was conducted before the COVID-19 outbreak, which was beneficial to provide a snapshot of the nurses' infection prevention and control preparedness by evaluating their adherence behaviour and factors influencing adherence to SPs in the acute care setting.

The CSPS reported in this study showed an overall positive compliance rate (76.68%) in the nurses adhering to the standard precautions guidelines, which reflected their daily practices. The nurses in the critical care setting reported a higher compliance rate (81.71%) as compared to the nurses in the general wards (75.85%). This could be explained by the higher percentage of critical care nurses having more than three years of clinical experience (94.3%) when compared to the general ward nurses (76.2%). This was similar to the findings from other studies whereby length of clinical experience was positively correlated with the nurses' compliance rate [1,11]. In this study, nurses reported overall highest compliance in the disposal of waste (84.23%), use of a protective device (83.40%), decontamination of spills and used items (83.40%) and prevention of cross-infection (73.50%). Although it was evident that the overall compliance rate was found optimal, inconsistencies exist amongst the individual elements of SP, indicating nurses were selective in their adherence, reflecting a trend found similar to the literature [4]. There were two items that reported fairly low rating, including "the sharps container is disposed of when its contents reach the full

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Table 1 Demographic characteristics of nurses (n = 241).

Characteristics	Overall (N = 241)	General ward nurses (Medical and Surgical) (n = 206)	Critical Care nurses (n = 35)	Statistical analysis	p
Age in years, n (%)				1.16[a]	0.56
20-30	134 (55.6%)	112 (54.4%)	22 (62.9%)		
31-40	81 (33.6%)	72 (35%)	9 (25.7%)		
40 and above	26 (10.8%)	22 (10.7%)	4 (11.4%)		
Gender, n (%)				0.58[a]	0.75
Male	36 (14.9%)	32 (15.5%)	4 (11.4%)		
Female	204 (84.6%)	173 (84%)	31 (88.6%)		
Designation, n (%)				4.53[a]	0.03*
Enrolled Nurse	45 (18.7%)	43 (20.9%)	2 (5.7%)		
Staff nurse	196 (81.3%)	163 (79.1%)	33 (94.3%)		
Clinical experience in years, n (%)				7.34[a]	0.06
1–3 years	49 (20.3%)	47 (22.8%)	2 (5.7%)		
3–6 years	68 (28.2%)	59 (28.6%)	9 (25.7%)		
7 years and above	124 (51.4%)	98 (47.6%)	24 (68.6%)		
Compliance rate (%) (CSPS), mean (SD)	76.70 (13.79)	75.85 (14.35)	81.71 (8.40)	2.35[b]	0.02*

Note: Compliance with Standard Precaution Scale (CSPS).
*Significant value $p < 0.05$.
[a] Chi-square test.
[b] Independent two sample t test.

Table 2 Frequency of Compliance rate with the Compliance with Standard Precautions Scale (CSPS) (N = 241).

Item	Use of protective device (6 items)	Disposal of sharps (3 items)	Disposal of waste (1 item)	Decontamination of spills and used articles (3 items)	Prevention of cross infection from person to person (7 items)
Compliance rate (%), Mean (SD)	83.4 (13.25)	54.63 (0.48)	84.23	83.40 (0.02)	73.50 (0.21)
Compliance rate (%), Range	65.49% –96.27%	3.32% –97.1%	84.23%	81.33%–85.89%	31.95%–92.95%

Table 3 Factors influencing adherence to standard precautions Scale (N = 241).

Item	Factor				
	Judgement	Leadership	Cultural/practice	Contextual cues	Justification
Mean (SD)	14.04 (4.04)	14.58 (3.78)	12.61 (3.18)	15.77 (3.60)	5.76 (4.57)
Range	3–17	4–16	5–15	4–16	0–20
Cronbach's α	0.67	0.78	0.60	0.62	0.76

line on the container" and "I only use water for hand washing", rating of 3.32% and 31.95% respectively. These findings were similar to another study which was reasoned by the international infection control experts that these could be largely due to the limited resources available in the hospital. This may be true in our hospital culture for the disposal of sharps container. Whereas for the item on handwashing using only water, this may be due to the easy access to alcohol handrubs at each patient's bedside and outside the room cubicles, resulting in most of the nurses

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Table 4 Goodness of Fit Indices for Confirmatory Factor Analyses of the Factors influencing adherence to standard precautions Scale.

	Chi	Df	p	Cmin/df	Gfi	Cfi	Rmsea	p/close	srmr	aic	bic
Model 1	708.221	265	<0.001	2.67	0.81	0.71	0.08	<0.001	0.10	828.22	1037.31
Model 2	537.35	220	<0.001	2.44	0.84	0.77	0.08	<0.001	0.09	649.35	844.50

Note: Model 1 = 5-factor, first-order model; Model 2 = Model 1 with items 4 and 24 removed.

Table 5 Correlation between the Compliance with Standard Precautions Scale (CSPS), Factors influencing adherence to standard precautions Scale (FIASPS).

Factor						
R value (*p* value)	CSPS score	FIASPS-Justification	FIASPS-Leadership	FIASPS-Contextual cues	FIASPS-Cultural practice	FIASPS-Judgement
CSPS score	–	−0.24 (<0.001)*	0.25 (<0.001)*	−0.01 (0.86)	0.24 (<0.001)*	<0.001 (1.00)

Note: Pearson product−moment correlation coefficient; *Significant value $p < 0.05$.

reporting 'often' and 'sometimes'. Recommended areas for improvement and strategies are detailed in Supplementary material (Table S2).

Various factors that could potentially influence the infection prevention and control practices of nurses in the clinical setting was explored using the FIAPS. The FIASPS showed suitability for the use among the nurses in our acute care setting. The judgement factor is based on nurses' own evaluation of the situation and the patients under their care, instead of according to the guidelines outlined in the work context. This factor is associated with individuals' risk-taking personality trait and nurses' perception of their competency and sufficient experience to make an assessment of the situation [10,11]. The mean score on this factor generated from this study was reported at a moderate level (M = 14.04, range = 3−17), which indicated a group of nurses who were practising SPs based on their own assessment of the situation and patients. This may indicate potential risk of nurses endangering themselves as well as their patients, especially when they deviate from the guidelines based on their own judgement of the situation [16]. Nurses' perceptions of their susceptibility to the bloodborne infectious diseases were identified to be a significant determinant in their adherence with the SP use [17]. It is a challenge to change the individuals' perceptions and behaviours in adhering to the guidelines. It is essential to constantly reinforce the infection control guidelines and their need to abide to them through regular training sessions [16]. (Table S2).

The leadership factor represents the individual's active approach in demonstrating supervision and informal leadership to influence people in the work environment to adhere to SP [18]. Leadership and supervision play an essential role in the promotion of safety culture in the workplace. It is encouraging that the mean rating of the leadership factor was moderate (mean = 14.58, range 4−16) in our sample of nurses, as well as the positive relationship with the compliance with SP score ($r = 0.25$, $p < 0.001$). Nurses need to demonstrate a willingness to confront poor infection control practices, as well as have good modelling behaviours for the junior staff to emulate and adopt good SP adherence practices.

The culture and practice factor is associated with the provision of an environment in the organization, which can encourage or deter the use of SP in the staff [12]. Establishing a safety culture and safe environment within an organization are positive reinforcing factors for staff adoption of good infection control practices [19] (Table S2). The mean score of the culture factor in the current group was reported as moderate (mean = 12.61, range = 5−15), with a positive relationship with the compliance with SP score ($r = 0.24$, $p < 0.001$). This positive rating indicated the acknowledgement by the nurses of the organization efforts to promote the use of SP guidelines in the workplace, with clear directions in the organization practices.

The contextual cues factors represented cues to one's action. Such cues may encourage individuals to adopt and internalize SP practices upon repetition of actions [20]. The nurses in the current sample scored a high rating on this factor (mean = 15.77, range = 4−16). Findings in previous studies highlighted the presence of positive or negative cues, such as awareness of patients' bloodborne virus status or inaccessibility of the protective equipment could influence staff's adherence to SP [19,21]. This needs to be interpreted with caution, as it may increase the risk to exposure of pathogens for the nurses to deviate from the guidelines based on their own assessment of the situation or the patient.

The justification factor refers to the reasons given by individuals for their non-adherence to SP. It is positive to have a low rating in this factor for our current sample (mean = 5.76, range = 0−20). This is reinforced by the finding of a negative relationship between the justification factor and nurses' compliance with SP ($r = -0.24$, $p < 0.001$). The low rating in the justification factor could be due to the regular training on infection control practices

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provided to the nurses, which reinforces the need to don PPE and gloves when they anticipate an exposure to body fluids. During training, it is essential to empahsise to the nurses not to perceive the use of SP as a barrier which may affect their delivery of care procedures or adding on their existing workload [10] (Table S2).

Limitations

A significant limitation to this research is the possible effects of the social desirability bias from the self-reporting of participants. Also, there is a lack of direct observation of adherence to the SP practice. The reported behaviour by the participants may not correlate completely with their actual practice or perception. Using additional methodologies may be useful to provide a more accurate measure of adherence, such as bedside observation aligned with self-reporting. An attempt has been made in this study to minimise the self-reporting bias with anonymity and confidentiality assured to the participants during the time of data collection.

Conclusion

Nurses would benefit from regular training sessions to improve their overall perception of the infection prevention and control measures and the risks involved with non-adherence. At the same time, encouraging nurses to be role models in the use of SPs in their individual work environment serves to increase the adherence to SPs in their colleagues. It is vital for the organization to continue with strict enforcement of policies with monitoring programs and sufficient visual reminders at workplace to maintain staff adherence to SPs.

Ethics

This study was approved by the institution ethics review board. Participation in this study was strictly voluntary. Anonymity and confidentiality of data were assured to all participants.

Authorship statement

All the authors in this study have contributed to the study and agree with the authorship statement.

Conflict of interest

The authors in this study have no conflicts to declare.

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CRediT authorship contribution statement

Siew Hoon Lim: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Resources, Software, Supervision, Writing - original draft. **Stéphane L. Bouchoucha:** Conceptualization, Data curation, Formal analysis, Software, Validation, Writing - review & editing. **Fazila Aloweni:** Conceptualization, Data curation, Project administration, Resources, Supervision, Validation, Writing - review & editing. **Nur 'Azzah Bte Suhari:** Conceptualization, Data curation, Investigation, Methodology, Project administration.

Appendix A. Supplementary data

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References

[1] Lam SC. Validation and cross-cultural pilot testing of compliance with standard precautions scale: self-administered instrument for clinical nurses. Infect Control Hosp Epidemiol 2014;35(5):547—55.
[2] Abdulraheem I, Amodu M, Saka M, Bolarinwa O, Uthman M. Knowledge, awareness and compliance with standard precautions among health workers in north eastearn Nigeria. J Community Med Health Educ 2012;2(3):1—5.
[3] Osborne S. Influences on compliance with standard precautions among operating room nurses. Am J Infect Contr 2003;31(7):415—23. https://doi.org/10.1067/mic.2003.68.
[4] Pereira FMV, Lam SC, Chan JHM, Malaguti-Toffano SE, Gir E. Difference in compliance with Standard Precautions by nursing staff in Brazil versus Hong Kong. Am J Infect Contr 2015;43(7):769—72.
[5] Gammon J, Hunt J. A review of isolation practices and procedures in healthcare settings. Br J Nurs 2018;27(3):137—40. https://doi.org/10.12968/bjon.2018.27.3.137.
[6] Martsolf GR, Auerbach D, Benevent R, Stocks C, Jiang J, Pearson ML, et al. Examining the value of inpatient nurse staffing: an assessment of quality and patient care costs. Med Care 2014:982—8.
[7] Adams JG, Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. JAMA 2020;323(15):1439—40. https://doi.org/10.1001/jama.2020.3972.
[8] Lam SC. Universal to standard precautions in disease prevention: preliminary development of compliance scale for clinical nursing. Int J Nurs Stud 2011;48(12):1533—9.
[9] Adebimpe WO, Ibirongbe DO. Exploring the knowledge and preventive practices on isolation precaution and quarantine among health care workers in ondo state, Nigeria. Ann Glob Health 2019;85(1). https://doi.org/10.5334/aogh.2454.
[10] Efstathiou G, Papastavrou E, Raftopoulos V, Merkouris A. Factors influencing nurses' compliance with Standard Precautions in order to avoid occupational exposure to microorganisms: a focus group study. BMC Nurs 2011;10(1):1.

[11] Nofal M, Subih M, Al-Kalaldeh M. Factors influencing compliance to the infection control precautions among nurses and physicians in Jordan: a cross-sectional study. J Infect Prev 2017; 18(4):182—8. https://doi.org/10.1177/1757177417693676.
[12] Bouchoucha SL, Moore KA. Factors influencing adherence to standard precautions scale: a psychometric validation. Nurs Health Sci 2019;21(2):178—85.
[13] World Health Organization. Practical guidelines for infection control in health care facilities. 2005. Retrieved from.
[14] Gerrish K, Lacey A. The research process in nursing. John Wiley & Sons; 2010.
[15] Portney LG, Watkins MP. Foundations of clinical research: applications to practice (Vol. 892). NJ: Pearson/Prentice Hall: Upper Saddle River; 2009.
[16] Bouchoucha SL, Moore KA. Infection prevention and control: who is the judge, you or the guidelines? J Infect Prev 2018; 19(3):131—7. https://doi.org/10.1177/1757177417738332.
[17] Powers D, Armellino D, Dolansky M, Fitzpatrick J. Factors influencing nurse compliance with Standard Precautions. Am J Infect Contr 2016;44(1):4—7.
[18] Neves HCC, Souza ACS, Medeiros M, Munari DB, Ribeiro LCM, Tipple AFV. Safety of nursing staff and determinants of adherence to personal protective equipment. Rev Latino-Am Enferm 2011;19(2):354—61.
[19] Quan M, Wang X, Wu H, Yuan X, Lei D, Jiang Z, et al. Influencing factors on use of standard precautions against occupational exposures to blood and body fluids among nurses in China. Int J Clin Exp Med 2015;8(12):22450—9.
[20] Nilsen P, Roback K, Broström A, Ellström P-E. Creatures of habit: accounting for the role of habit in implementation research on clinical behaviour change. Implement Sci 2012;7(1):1—6.
[21] Cutter J, Jordan S. Inter-professional differences in compliance with standard precautions in operating theatres: a multisite, mixed methods study. Int J Nurs Stud 2012;49(8):953—68.

Please cite this article as: Lim SH et al., Evaluation of infection prevention and control preparedness in acute care nurses: Factors influencing adherence to standard precautions, Infection, Disease & Health, https://doi.org/10.1016/j.idh.2020.11.005