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Risk reduction model: A current approach to disease transmission prevention to clinical nurses in hospitals

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ABSTRACT

Background & Aim: Nurses worldwide face serious challenges in dealing with infectious diseases. A transmission prevention model is expected to be a strategy to overcome these challenges. To date, most of the available models are in the form of disease prevention models primarily implemented to detect infections. In contrast, only a few models are implemented to improve disease transmission prevention behavior, especially in nurses. This study aims to find a model of infection transmission prevention adopted from the aids risk reduction model.
Methods & Materials: This study was an analytic observational study and employed a cross-sectional approach. This study was conducted in two hospitals in Makassar City and involved 123 respondents. The data were analyzed using multiple linear regression tests.
Results: This study finds that there is a correlation between organizational factors and nurses' commitment (b=.268) (*p=.003*); there is a correlation between self-justification and nurses' self-labeling as at-risk individuals of contracting the disease (b=-.180) (*p*=.049); there is a correlation between labeling and actions to reduce the risk of disease transmission (Enactment) (b=.255)(*p*=.001); there is a correlation between nurses' commitment and enactment (b=.651)(*p*=.001).
Conclusion: The risk reduction model could represent the nurses' disease transmission prevention behavior.

Introduction

Nurses are health workers who are at a high risk of exposure to pathogens during daily practices; this is possible because they frequently contact patients (1). The World Health Organization (WHO) estimates that of 35 million healthcare workers worldwide, 3 million of them have annually experienced needle stick injury on pathogens transmitted through blood (2). This condition agrees with the findings of a previous study showing that most health workers do not follow standard precautions; consequently, they are at high risk of exposure to infectious diseases when not adopting standard prevention protocols, and they probably transmit infectious diseases to patients (3). Inadequate compliance with infection prevention and control standards has put millions of patients and healthcare workers globally, especially nurses, at risk of infectious diseases, including hospital-acquired infection (HAI) (4). In addition, the hospital is one of the most dangerous workplaces that can cause injuries and occupational diseases. The number of injuries and occupational diseases in hospitals ranks first among other workplaces, such as construction and manufacturing (5).

Given the importance of person-to-person transmission in the spread of infectious diseases, it is critical that infectious disease

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models appropriately represent human behavior in terms of infection prevention (6). These models are crucial for planning responses to infectious disease outbreaks as well as improving our understanding of potentially novel disease strains (1). To date, the majority of available models on disease transmissions have only focused on infection detections, such as the Susceptible-Exposed-Infectious-Recovered (SEIR) infectious disease epidemiology model (7) and spatial dynamics of an epidemic model with nonlocal infection (8).

Meanwhile, there are only limited preventive models that improve disease transmission prevention behavior, and there is only one model, namely the aids risk reduction model (ARRM) (9). This transmission prevention model was introduced by Catania (1990) and specifically aimed to prevent HIV transmission; ARRM is made up of three stages: variable labeling (when a person labels or identifies himself as a risky individual), commitment (when a person makes a decision with multiple outcomes), and enactment (The stage at which a person seeks and defines a solution before enacting a predetermined solution to perform a new behavior) (9).

The use of ARRM as a basic model in disease transmission prevention practice in nurses is based on the consideration that ARRM focuses on social and psychological factors that are hypothesized to influence the labeling of high-risk behaviors as problematic, commitment to changing high-risk behaviors and seeking and enacting solutions to reduce high-risk activities (3). In addition, this model denotes hypothesized factors that influence people's motivation to continue with the change process over time (3). Meanwhile, the findings of Schneider et al. (2010) suggest that ARRM could be utilized by health workers to increase an individual's commitment to HIV prevention intervention in India (15). Therefore, this study adopted the ARRM as a model to find the most relevant disease transmission prevention model applied to nurses.

In addition, the ARRM could function as the basis to develop interventions (10), gain insights from healthcare workers, develop the intervention by identifying key issues to help or hinder adherence to infection prevention and control practices (11) and deal with challenges of developing appropriate disease transmission prevention programs for health professionals. This study has conducted a preliminary survey to determine the nurses' actions to prevent disease transmission and employed observation sheets that refer to the guidelines of the standard precaution (12). The previous study discovered that the standard precaution had not been optimally implemented because only 67.9% of the nurses implemented it. Such a condition increases the risk of contracting diseases in nurses.

To create a low risk of transmission in nurses, this study conducted trials of disease transmission prevention models applicable to nurses. Therefore, this study adopted and modified the ARRM. This model was selected because this model applies not only to patients but also to health workers. This study specifically tested the ARRM concept by modifying the model flow to find a base model and solve the problem of disease transmissions in nurses and patients in hospitals. Moreover, this study was conducted to discover a model as a new approach to preventing transmission in nurses in hospitals.

Methods

This study was an analytic observational study and employed a cross-sectional approach. The study was conducted in two hospitals in Makassar, Indonesia, from 2015 to 2016.

The respondent of this research was 123 nurses who were selected using consecutive sampling. However, four respondents dropped out. Thus, the sample

size, until the completion of the study, was 119 respondents. The sample size employed software for sample size determination in health studies and obtained a minimum sample size of 86 respondents. To anticipate errors, the number of samples was added to 25% of the total sample. The inclusion criteria were charge nurses with minimum bachelor's education and informed consent to participate in this study. Meanwhile, the exclusion criteria were nurse managers and nurses not attending this research.

Before collecting the data, the researchers developed research instruments. The development of instruments is carried out in three stages: (1) preliminary consideration, (2) development and translation, and (3) validation. The questionnaire of this research includes a self-justification questionnaire, a questionnaire of organizational factors of transmission risk reduction, a labeling questionnaire, commitment questionnaire, and an enactment questionnaire. The Pearson product-moment correlation and Alpha Cronbach were used to assess the instrument's validity and reliability. The instruments of this research were valid and reliable with the following scores: self-justification (r count: 0.330-0.655) (0.714), organizational factors (r count: 0.316-0.942) (0.818), labeling (r count: 0,318-0,515) (0.618), commitment (r count: 0,317-0,959) (0.837), and enactment (r count: 0,325-0,834) (0.658). The multiple linear regression test was employed to identify the influence of independent and dependent variables before proceeding with path analysis. All analyses were conducted using the Statistical Package for Social Sciences of version 22.0 from IBM, Armonk, NY, the US. Data with a p-value of <.05 is considered statistically significant. Meanwhile, the missing data were excluded from all analyses.

Ethical approval for this trial was obtained from the Institutional Review Boards in Surabaya, Indonesia (433-KEPK). All participants received documents explaining the ethical considerations of this survey. They were informed that their participation was voluntary and would not cause any disadvantages. Moreover, they were allowed to withdraw from the study at any time without prejudice.

Results

Table 1 shows that the majority of nurses are between the ages of 26 and 35 (49.6%) and are female (81.5%). Nurses' perceptions of organizational conditions in hospitals related to disease transmission prevention (organizational factors) are mostly good (52.1%). Furthermore, 59.7% of nurses have external self-justification, 85.7% strongly commit to preventing transmission, and disease prevention practices are rated as good (enactment) (82.4%).

Table 1. Characteristics of respondents and distribution of organizational factors, self-justification, labeling, commitment, and enactment of nurses

Characteristics of respondents	n	%
Age group (years)		
<26	9	7.6
26-35	59	49.6
36-45	47	39.5
>45	4	3.4
Total	119	100.0
Gender		
Male	22	18.5
Female	97	81.5
Total	119	100.0
Level of education		
Bachelor of Nursing	74	62.2
Professional Nurse Program	45	37.8
Total	119	100.0
Organizational factors		

Less good	57	47.9
Good	62	52.1
Total	119	100.0
Self-justification		
External	71	59.7
Internal	48	40.3
Total	119	100.0
Labeling		
Weak	48	40.3
Strong	71	59.7
Total	119	100.0
Commitment		
Weak	17	14.3
Strong	102	85.7
Total	119	100.0
Enactment		
Less good	21	17.6
Good	98	82.4
Total	119	100.0

Table 2 shows the organizational factors significantly affect the self-justification of the nurses. The nurses who perceive that the hospital performs poor organizational factors in disease transmission risk reduction tend to use external self-justification. In contrast, the nurses who perceive that the hospital performs good organizational factors in disease transmission risk reduction tend to use internal self-justification.

Table 2. Correlates of organizational factors on nurses' self-justification, labeling, commitment, and enactment to reduce the risk of disease transmission

Organizational factors	Self-justification				*p*	*b*	Labeling				*p*	*b*
	External		Internal				Weak		Strong			
	n	%	n	%			n	%	n	%		
Less good	39	68.4	18	31.6			21	36.8	36	63.2		
Good	32	51.6	30	48.4	.003	.268	27	43.5	35	56.5	.24	.119
Total	71	59.7	48	40.3			48	40.3	71	59.7		
	Commitment						**Enactment**					
	Weak		**Strong**				**Inadequate**		**Adequate**			
	n	**%**	**n**	**%**			**n**	**%**	**n**	**%**		
Less good	36	63.2	21	36.8	.001	.328	13	22.8	44	77.2	.55	.040
Good	25	40.3	37	59.7			8	12.9	54	87.1		
Total	61	51.3	58	48.7			21	17.6	98	82.4		

Table 3 shows that the nurses' more internal self-justification will create stronger self-labeling as at-risk individuals of contracting the disease, nurses' more internal self-justification will create a stronger commitment to reduce the risk of disease transmission, the nurses' more internal self-justification will create more significant actions to reduce the risk of disease transmission. Table 3 shows the percentages of nurses who have strong labeling and strong commitment. This finding indicates that the nurses' stronger self-labeling as at-risk individuals will lead to a stronger commitment to reduce the risk of disease transmission, the nurses' stronger commitment to reduce the risk of disease transmission will result in better actions to reduce the risk of disease transmission, nurses' stronger self-labeling as at-risk individuals will result in better enactment to reduce the risk of disease transmission.

Table 3. Correlates of nurses' self-justification on labeling, commitment, and enactment to reduce the risk of disease transmission

Self-justification	Labeling				*p*	*b*	Commitment				*p*	*b*	Enactment				*p*	*b*
	Weak		Strong				Weak		Strong				Inadequate		Adequate			
	n	%	n	%			n	%	n	%			n	%	n	%		
Internal	21	36.2	37	63.8			9	15.5	49	84.5			23	39.7	35	60.3		
External	27	44.3	34	55.7	.04	-.18	8	13.1	53	86.9	.2	.1	36	59.0	25	41.0	.40	-.07
Total	48	40.3	71	59.7			17	14.3	102	85.7			59	49.6	60	50.4		

Correlates of nurses' labeling on commitment and enactment & nurses' commitment on enactment to reduce risk of disease transmission

Labeling	Commitment				*p*	*b*	Enactment				*p*	*b*	Commitment	Enactment				*p*	*b*
	Weak		Strong				Inadequate		Adequate					Inadequate		Adequate			
	n	%	n	%			n	%	n	%				n	%	n	%		
Weak	26	54.2	22	45.8			9	18.8	39	81.3			**Weak**	13	21.3	48	78.7		
Strong	35	49.3	36	50.7	.2	.1	12	16.9	59	83.1	.00	.2	**Strong**	8	13.8	50	86.2	.00	.65
Total	61	51.3	58	48.7			21	17.6	98	82.4			**Total**	21	17.6	98	82.4		

The findings of this study indicate that there are different stages in the practice of preventing disease transmission in nurses than Catania described (ARRM). The risk reduction model (RRM) could represent the nurses' disease transmission prevention behavior. Nurses labeling themselves as at-risk individuals (labeling), could directly reduce the risk of disease transmission (enactment). Moreover, they could directly commit (commitment) and reduce the risk of disease transmission (enactment) without labeling stages. In contrast, Catania (1990) demonstrated that a person who labels himself at-risk does not commit to changing his risky behavior but will leave the stage; thus, he could not continue to the enactment stage (14).

The Risk Reduction Model explains behavior patterns for preventing disease transmission among nurses. This understanding can serve as the foundation for designing infection control policies in hospitals to enhance the safety and security of the nursing work environment. Moreover, in nursing education, it is essential to comprehend high-risk behavior patterns associated with daily nursing practice and the factors that influence them. RRM outlines a behavior model for disease transmission prevention and its determinants to continue the process of change that is influenced by internal and external influences over time. This is the knowledge that nursing students can use in clinical practice.

Discussion

The trial on the flow modification conducted in the aids risk reduction model (ARRM) has revealed that the ARRM concept (9), which was originally devoted to reducing the risk of contracting HIV/AIDS, is also applicable to reduce the risk of various disease transmission in nurses. We call this condition the risk reduction model (RRM).

The application of RRM can be a major strategy to improve the prevention behavior of infectious disease transmission in nurses. This is possible because they are at risk of contracting and transmitting hospital-acquired infections while providing nursing care (13). The nurses' efficient knowledge, good attitudes, and best practices in infection prevention and control could decrease hospital infection rates. Negative attitudes to prevent nosocomial infections are related to the risk of infection transmission through the blood and body fluids of patients and nurses. Infections in health workers can also affect the quality of hospital services. In addition, poor infection

prevention and control have put nurses at increased risk of contracting infectious diseases while serving patients (14).

In addition, RRM is crucially applied to nurses because many studies have proven that nurses are highly at risk of contracting diseases from patients. Moreover, previous findings show that infectious diseases significantly contribute to the morbidity and mortality of health workers in Sub-Saharan Africa, and nurses involved in direct patient care are at increased risk of nosocomial infections and other infections (15). These findings are supported by Sapkota and Koirala (2020), who have discovered that more than 50% of health workers experience health hazards, such as needle stick injuries, due to a lack of knowledge and standard precautionary practices (17). Meanwhile, another study has discovered that the average risks of virus transmission through blood-borne in a pinprick accident are 30% for the Hepatitis B virus, 3% for the Hepatitis C virus, and 0.3 % for HIV (18). These findings confirm that nurses are particularly at risk of contracting the disease from patients.

Meanwhile, this research has found that organizational factors influence the nurses to be involved in the risk reduction model (RRM). Organizational factors also greatly influence the nurses' commitment to reducing risks. Thus, they could perform risk reduction behavior of disease transmission. There are nine indicators to measure occupational safety climate: 1) management commitment, 2) management communication, 3) occupational safety regulations and procedures, 4) work environment, 5) supervision environment, 6) nurse involvement, 7) appreciation of risk, 8) work pressure, and 9) competence conformity (19).

The organizational factor indicators in the hospital, management support, human resources, facilities, and infrastructure are parts of the successful implementation of infection control and prevention (20). In addition, work environment factors affect the availability of facilities to obtain information about infection prevention. Thus, the hospital management should facilitate the procurement of all infection prevention materials. Health workers generally consider that the available space in the physical environment is pivotal to facilitating the management and control of cross-contamination (15). In addition, leadership factors influence compliance, and cultural practices are related to organizational issues that encourage or hinder the use of standard precautions.

These aspects can be successful with the support of good management communication and affect the nurses' behavior in applying the hospital SOP. Good communication will increase the perception of risks and intentions and influence safety behavior. A person will perform good behavior if he has a perception of risks and intentions and is influenced by external variables that create a safety climate (21). Good communication between hospital management and the nurses is a strategy to improve the safety climate so that occupational injuries can be prevented (22). In addition, the nurses should be directly involved in the safety climate because when they have the opportunity to contribute to safety planning in hospitals, they will more significantly control hazards and prevent work accidents (23). Health workers report that they need support to get the right evidence. For example, the participants want valid proof of effective hours to implement PPE items. Moreover, the support of an infection control team will be helpful.

Furthermore, this study has found that organizational factors affect the nurses' self-justification, which is correlated with the labeling elements in RRM. Self-justification relates to the reasons for rationalizing their using or not using the standard precaution (24). Self-justification is also useful to resolve psychological stress (25). The nurses who own

a fairly good perception of management commitment, rules and procedures, work environment, supervision environment, involvement, and risk appreciation tend to use external self-justification; in contrast, the nurses who have a good perception tend to use internal self-justification (26). The motivated reasoning theory postulates that the need for self-justification could indirectly escalate commitment through other cognitive processes. Nevertheless, the nurses who have been trained with standard precaution knowledge sometimes do not perform their duties following this standard due to various reasons to justify their previous actions (self-justification) (27). This finding agrees with previous studies that the culture of complacency at work has made health workers less likely to obey infection prevention and control (IPC) guidelines (28).

Labeling is the first stage in the RRM. An individual who labels himself at risk of contracting the disease can directly perform measures to prevent disease transmission in the third stage (enactment). The successful implementation of protective measures could ensure the safety of medical staff and patients (29). This condition also describes a belief stating that certain behavior patterns could reduce the disease transmission risk in an individual. Besides performing measures to prevent disease transmissions, such as self-labeling, commitment, and enactment, other strategies can also be applied to minimize infection. These comprise quickly tracking patients to clinic appointments, minimizing hospital overcrowding, managing patients outside the hospital, providing separate wards for contaminated patients, and restricting visitors (30).

Conclusion

The risk reduction model (RRM) is the latest approach to reducing the risk of various disease transmissions in nurses. ARRM can only be used for systematic or sequential risk reduction of disease transmission but cannot accommodate unsystematic behavior. RRM can accommodate these shortcomings. The nurses who performed self-labeling can do the enactment stages without having a strong commitment to their behavior. Commitment is necessary and will probably emerge gradually, and the benefits of risk reduction measures will be perceived by the nurses. In addition, other internal and external factors in nurses must be investigated to strengthen the practice elements of disease transmission prevention in this model (RRM).

Our study Limitations/Potential Sources of Bias, Self-reporting from nurses may have introduced memory bias with either over-reporting or underreporting depending on the person's behavior in recent past information, which may have led to information bias.

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Conflict of interests

There are no conflicts of interest to declare.

References

1. Jeong YJ, Kang J. Development and validation of a questionnaire to measure post-intensive care syndrome. Intensive and Critical Care Nursing. 2019 Dec 1;55:102756.
2. Yenesew MA, Fekadu GA. Occupational exposure to blood and body fluids among health care professionals in Bahir Dar town, Northwest Ethiopia. Safety and health at work. 2014 Mar 1;5(1):17-22.
3. Ather H, Khan A, Shabnum S. Knowledge and compliance toward standard precaution among health care workers at Bahria International Hospital Lahore, Pakistan. International Journal of Social Sciences and Management. 2020 Jan 27;7(1):17-20.
4. World Health Organization. Infection prevention and control GLOBAL; 2018.

Available from: https://www.who.int/health-topics/infection-prevention-and-control
5. Occupational Safety and Health Administration. Caring for caregivers; 2013. Available from: http://www.mtpinnacle.com/pdfs/OSHA-1.2_Factbook_508.pdf
6. Weston D, Hauck K, Amlôt R. Infection prevention behaviour and infectious disease modelling: A review of the literature and recommendations for the future. BMC Public Health. 2018 Dec;18:1-6.
7. D. Berger, K. Herkenhoff, and S. Mongey, "An SEIR Infectious Disease Model with Testing and Conditional Quarantine, in SSRN Electronic Journal, 2020; 1–29.
8. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, Qiu Y, Wang J, Liu Y, Wei Y, Yu T. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. The Lancet. 2020 Feb 15;395(10223):507-13.
9. Cattania JA, Keggles SM, Coates TJ. Towards understanding of risk behavior: An AIDS risk reduction model (AARM). Health Education Quarterly. 1990;17(1):53-72.
10. Brecht ML, Stein J, Evans E, Murphy DA, Longshore D. Predictors of intention to change HIV sexual and injection risk behaviors among heterosexual methamphetamine-using offenders in drug treatment: A test of the AIDS Risk Reduction Model. The Journal of Behavioral Health Services & Research. 2009 Apr;36:247-66.
11. Cochrane Effective Practice and Organisation of Care Group, Houghton, C., Meskell, P., Delaney, H., Smalle, M., Glenton, C., Booth, A., Chan, X.H.S., Devane, D. and Biesty, L.M., 1996. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. Cochrane database of systematic reviews, 2020(8). Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013582/pdf/full.
12. Centers for Disease Control and Prevention. Standard Precautions for All Patient Care; 2016. Available from: https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html
13. Abdulraheem IS, Amodu MO, Saka MJ, Bolarinwa OA, Uthman MM. Knowledge, awareness and compliance with standard precautions among health workers in north eastearn Nigeria. Community Medicine & Health Education. 2012, 2:3. http://dx.doi.org/10.4172/jcmhe.1000131
14. Catania JA, Kegeles SM, Coates TJ. Towards an understanding of risk behavior: An AIDS risk reduction model (ARRM). Health education quarterly. 1990 Mar;17(1):53-72.
15. Schneider JA, Dandona R, Pasupneti S, Lakshmi V, Liao C, Yeldandi V, Mayer KH. Initial commitment to pre-exposure prophylaxis and circumcision for HIV prevention amongst Indian truck drivers. PLoS One. 2010 Jul 30;5(7):e11922.
16. Sapkota MA, Koirala AK. Adoption of Standard Precaution for Infection Prevention among Health Service Workers in Pokhara Metropolitan. International Journal of Innovative Studies in Medical Sciences. December 2019; 3(6): 26-30.
17. Zhu S, Kahsay KM, Gui L. Knowledge, Attitudes and Practices related to standard precautions among nurses: A comparative study. Journal of Clinical Nursing. 2019 Oct;28(19-20):3538-46.
18. Nurkhasanah and U. Sujianto, "Prosiding konferensi nasional ii ppni jawa tengah 2014 kepatuhan perawat dalam penerapan kewaspadaan universal di rumah sakit dokter kariadi semarang tahun 2013. 2014; 2(1):222–8. [Indonesian]
19. Pecquet CF. Measuring safety climate as an indicator of effective safety and health programs in the construction industry. Louisiana State University and Agricultural & Mechanical College; 2013.
20. Wang J, Liu F, Tan JB, Harbarth S, Pittet D, Zingg W. Implementation of infection prevention and control in acute care hospitals in Mainland China: A systematic review. Antimicrobial Resistance & Infection Control. 2019 Dec;8:1-6.
21. M. D. Cooper, R. A. Phillips. Exploratory analysis of the safety climate and safety behavior relationship. Journal of Safety Research. 2004; 35(5): 497–512. doi: 10.1016/j.jsr.2004.08.004.
22. Agencia Europea para la Seguridad y la Salud en el Trabajo. Worker Participation in Occupational Safety and Health: A Practical Guide. Publications Office of the European Union; 2012. Available from: https://osha.europa.eu/en/publications/worker-participation-occupational-safety-and-health-practical-guide.

23. D. Kimmel. Employee involvement - Building a Safety & Health Management System, 2012. Availabale from: https://www.michigan.gov/-/media/Project/Websites/leo/Documents/MIOSHA13/lara_miosha_employee_involvement.pdf?rev=4ca362b96e3246519f6d101736d87ac8
24. Bouchoucha SL, Kilpatrick M, Lucas JJ, Phillips NM, Hutchinson A. The Factors Influencing Adherence to Standard Precautions Scale–Student version (FIASP-SV): A psychometric validation. Infection, Disease & Health. 2021 May 1;26(2):85-94.
25. Lee Y, Jung H. Meant to be disconnected: broker's perception bias and self-justification motivation. InAcademy of Management Proceedings 2017; 2017(1):15037.
26. Martiana T, Damayanti NA. Effects of Self-Justification on and Nurses' Commitment to Reducing the Risk of Disease Transmission in Hospitals. Pakistan Journal of Nutrition. 2016;15(4):324-7.
27. A. Sahara, Faktor- Faktor yang Berhubungan dengan Kepatuhan Perawat dan Bidan dalam Penerapan Kewaspadaan Universal/Kewaspadaan Standar di Rumah Sakit Palang Merah Indonesia Bogor Tahun 2011. Universitas Indonesia, 2011. [Indonesian]
28. Woith W, Volchenkov G, Larson J. Barriers and motivators affecting tuberculosis infection control practices of Russian health care workers. The International Journal of Tuberculosis and Lung Disease. 2012 Aug 1;16(8):1092-6.
29. Zheng J, Ni X, Yuan W, Hou L. Nursing strategies for COVID-19 prevention and control in a selected dental clinic. International Nursing Review. 2021 Jun;68(2):189-95.
30. Rowlands A. Medical social work practice and SARS in Singapore. Social Work in Health Care. 2007 Aug 16;45(3):57-83.