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NURSE'S ATTITUDE TOWARD PATIENT SAFETY POLICY IN BALI ROYAL HOSPITAL, INDONESIA: INDIVIDUALIZED APPROACH USING HEALTH BELIEF MODEL

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ABSTRACT

Background: Patient safety is one of the most important dimensions in quality of healthcare. Nurses are the key in care delivery, their compliance toward Patient Safety policy cannot be overlooked. Studies evaluating determinants of nurse's compliance to Patient Safety policy is still lacking.

Aims: To evaluate nurse's attitude toward Patient Safety policy using Health Belief Model (HBM).

Methods: An analytical cross-sectional study was carried on in Bali Royal Hospital, Indonesia, on December 2016. An anonymous, self-administered questionnaire was used to collect the data on socio demographics, knowledge, and attitude toward Patient Safety policy. Attitudes are specifically assessed using HBM.

Results: A total of 124 nurses are included in this study. Mean age of the study population was 29.7±6.7 years. Mean score for knowledge about Patient Safety policy was 12.68±3.40 from 18.0-point scale. Nurses perceived a low risk of non-compliance (mean perceived risk 8.07±1.89) and a low barrier to comply with Patient Safety policy (mean perceived barrier 8.66±1.78). Knowledge and attitudes toward Patient Safety policy did not differ by sex and educational background but it did differ according to unit of workplace. Age and length of work correlated positively to knowledge (Spearman's $r=0.439$, p -value 0.000; and $r=0.400$, p -value <0.001, respectively). A positive and moderate correlation was observed between knowledge vs. perceived severity ($r= 0.394$, p -value <0.001) and knowledge vs. perceived benefit ($r=0.422$, p -value < 0.001). There was a strong and positive correlation between perceived severity and perceived benefit ($r= 0.725$, p -value <0.001).

Conclusion: Nurse's attitudes toward Patient Safety policy were generally good and correlate positively with knowledge. The use of HBM provides an increased understanding of how individual perceptions can be influenced to improve nurse's engagement in promoting safer health care.

Keywords: Nurse, Health Belief Model, Bali Royal Hospital, Patient Safety.

INTRODUCTION

Quality in healthcare has different dimensions and elements [1-4], of which patient safety is one of the most important dimensions [5]. Patient safety is a serious global challenge [6,7]. According to WHO, in low and middle income countries (LMIC) one out of ten patients is harmed while receiving health services [8]. *The Canadian Adverse Events Study* found an incidence rate of 7.5% of adverse events, (i.e. unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health-care management) among hospitalized adults in Canada, extrapolating to nearly 185,000 hospital-related adverse events annually [9]. Moreover, nearly 70,000 of these adverse events were found to be potentially preventable. Other research on patient safety in the United States, UK, Australia and elsewhere [10-14], and policy documents including the Institute

of Medicine's *To Err is Human* [15], point towards the injury burden resulting from unintended harm resulting from care, and the need to address these issues. In Bali Royal Hospital, Indonesia, there were 7 reports of patient safety incidents in May 2016, and 4 reports in July 2016. Thus, it necessitates some efforts to be done to prevent patient safety incidents.

One key strategy for improving patient safety is involving nurse in recognizing risks and preventing harm. Nurse involvement has been an integral part of a number of international patient safety campaigns, including the World Health Organization's patient safety campaign. Nurses are the key in delivering care to the patient and their compliance with Patient Safety policy cannot be simply overlooked. Compliance is greatly influenced by personal attitude among nurses. However, studies evaluating nurse's attitude toward Patient Safety Policy are still lacking. Therefore, their personal attitudes toward Patient Safety policy are not known.

Health belief model (HBM) is a psychological model that is widely used to explain and predict health behavior. According to HBM, health behavior is greatly influenced by personal attitude and beliefs and thus, health behavior can be predicted by focusing on the attitudes of individuals (Figure 1) [16,17]. Attitude is defined as personal perception, i.e. a settled way of thinking or feeling, toward some issues that is reflected in a person's own behavior. Therefore, according to HBM, nurse's compliance toward patient safety is reflected by their own behaviors whether they comply or not comply with Patient Safety policy, and their behaviors will be greatly influenced by their personal perception or way of thinking, i.e. their attitude, toward Patient Safety policy. Health behavior is a complex concept and rather difficult to observed and measured directly, but it can be predicted by a more measurable and obvious variable, i.e. personal attitude.

There are four main domain of attitude in HBM, i.e. *perceived risk or susceptibility*, *perceived severity*, *perceived benefits*, *perceived barriers* [16,17]. Perceived risk or susceptibility is perceiving and believing that an individual faces the disease risk. Perceived severity is perceiving and believing that problem is serious and the health problem may lead to a serious problem for the individual. Perceived barriers are physical, mental or financial and etc. encountered by individual for adopting health behavior. Perceived benefits are individual's belief in behavior or observing the suggestions with benefits or effects on prevention of a disease or reduction of its severity and side effects. However, studies conducted using HBM to evaluate nurse's attitude toward Patient Safety policy is still lacking.

Since HBM is very efficient in evaluating or predicting personal attitude, and thus, health behavior, the present study is aimed to evaluate nurse's attitude on complying with Patient Safety policy during care delivery by using HBM. Results of this study can be used as a reference for the future studies and for adopting policies and educational program aiming at promotion of care delivery that complies with the Patient Safety policy.

METHODS

A cross-sectional study was carried on in Bali Royal Hospital, Denpasar, Indonesia, on December 2016. A cross sectional study or a cross sectional analysis is a type of observational study that analyses data – collected from a population, or a representative subset, at a specific point in time – thus, we derived the cross-sectional data on both independent and dependent variables at one point of time [18]. Registered nurses who had been working in Bali Royal Hospital for more than 6 months since the commencement of the study were consecutively recruited into the study population. Samples were selected among nurses in the emergency room, outpatient clinic, inpatient ward, critical care ward, operating room, labor and delivery, hemodialysis unit, IVF clinic, and managerial office using a purposive sampling. Nurses from many departments were selected into the study population to give

insight on nurse's attitude difference according to which department they are working on. A total of 124 nurses gave informed consent and participated.

An anonymous, self-administered questionnaire was used to collect the data. The selected participants were assembled in a meeting room on the day of survey and were given brief information containing the purpose and procedure of the survey by the first author. Each participant then completed the questionnaire under a close supervision of the first author. Independent variables were socio demographic characteristics (age, sex, marital status, educational background, and monthly salary), unit of work, length of work, and knowledge about Patient Safety. Dependent variables were attitudes toward Patient Safety policy. Dependent variables were analyzed specifically using Health Belief Model (HBM) theory.

Knowledge was assessed based on nurse's response to 18 factual statements about the hospital Patient Safety policy that has been adopted in daily practice. Each statement had three possible responses (true, false, or don't know), with every correct response assigned a score of 1, and every incorrect/don't know response assigned a score of 0. A total score was then calculated (range 0.00 to 18.00). Attitudes toward Patient Safety policy was specifically assessed using a Health Belief Model (Figure 1), with the main constructs of attitudes measured were *perceived risk/susceptibility*, *perceived severity*, *perceived benefit*, and *perceived barrier*.

Perceived risk or susceptibility was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived risk scale were as follows: i) I don't understand the hospital policy on Patient Safety; ii) I don't think I've involved in sufficient training on Patient Safety; iii) My knowledge in Patient Safety is lacking; iv) My skills in delivering care according the principles of Patient Safety is lacking. Responses were coded so that higher values indicated higher perceived risk (possible range, 4.0-16.00).

Perceived severity was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived severity scale were as follows: i) Patient safety incident is a serious matter; ii) Patient safety incident can be fatal; iii) Patient safety incident can jeopardize the image of the hospital I've been working at; iv) Patient safety incident can negatively impact my salary. Responses were coded so that higher values indicated higher perceived severity (possible range, 4.0-16.00).

Perceived Benefit is an individual perception on the positive impacts resulting from compliance to the Patient Safety policy, and was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived benefit scale were as follows: i) Delivering care that comply with the principles of Patient Safety policy can enhance patient's satisfaction; ii) Delivering care that comply with the principles of Patient Safety policy positively impact the image of the hospital I've been working at; iii) Delivering care that comply with the principles of Patient Safety policy positively impact my salary; iv) Delivering care that comply with the principles of Patient Safety policy give me satisfaction or pride. Responses were coded so that higher values indicated higher perceived benefit (possible range, 4.0-16.00).

Perceived barrier is an individual perception on barrier of delivering care that comply with the principles of Patient Safety policy, and was assessed using a four-item scale, with each scale item measured using a 4-point response scale, labeled "strongly disagree", "somewhat disagree", "somewhat agree", and "strongly agree." The four specific items comprising the perceived barrier

scale were as follows: i) It's hard for me to deliver care that comply with the principles of Patient Safety because my knowledge is lacking; ii) It's hard for me to deliver care that comply with the principles of Patient Safety because I don't receive enough support or motivation from my working environment; iii) It's hard for me to deliver care that comply with the principles of Patient Safety because I don't have enough time to do it; iv) It's hard for me to deliver care that comply with the principles of Patient Safety because my work burden is exhausting. Responses were coded so that higher values indicated higher perceived barrier (possible range, 4.0-16.00).

Data were analyzed using SPSS version 16.0. Univariate analysis was used to generate frequencies and percentages of categorical variables. Continuous variables are presented as Mean \pm SD. Bivariate analysis was used to evaluate the relationship between independent variables and dependent variables. Spearman correlation was used to test the hypotheses. Level of statistical significance (P-value) was set at 0.05.

RESULTS

Characteristics of the study population

A total of 124 nurses are included in this study, 21.0% of them are male, 66.9% are married, and 54.8% had a diploma in nursing. Mean age of the study population was 29.7 ± 6.7 years. Background characteristics of the study population are summarized in Table 1.

Table 1. Distribution of respondent's characteristic

Parameters		Number of Respondents (N)	Percentage (%)
Age	21-30 years	91	73.4
	31-40 years	25	20.2
	41-50 years	5	4.0
	51-60 years	2	1.6
	Older than 60 years	1	0.8
	Total	124	100.0
Sex	Male	26	21.0
	Female	98	79.0
	Total	124	100.0
Marital status	Single	41	33.1
	Married	83	66.9
	Total	124	100.0
Educational background	Diploma	68	54.8
	Bachelor	56	45.2
	Total	124	100.0
Unit of work	Emergency room	19	15.3
	Inpatient ward	29	23.4
	Critical care ward (ICU, PICU, NICU)	17	13.7
	Outpatient clinic	19	15.3
	Labor and Delivery	6	4.8
	Operating room	19	15.3
	Hemodialysis unit	3	2.4
	IVF Clinic	3	2.4
	Managerial office	9	7.3
	Total	124	100.0
	Rank/Status	Practitioner	82
Chief/Team leader		26	21.0
Chief of Unit/Manager		16	12.9
Total		124	100.0

Length of Work	Less than 1 year	7	5.6
	1-3 years	50	40.3
	3-5 years	53	42.7
	More than 5 years	14	11.3
	Total	124	100.0
Monthly salary	Less than IDR 2 millions	44	51.2
	IDR 2-4 millions	34	39.5
	IDR 4-6 millions	7	8.1
	More than IDR 6 millions	1	1.2
	Total	86	100.0*
Attendance to training or workshop on Patient Safety in the last 1 year	Never	4	3.2
	Once	70	56.5
	Twice	37	29.8
	More than twice	13	10.5
	Total	124	100.0
Encountering patient safety incident in the last 1 year	Never	33	26.6
	Once or twice	70	56.5
	3-4 times	14	11.3
	More than 4 times	7	5.6
	Total	124	100.0

*valid percentage

Knowledge and attitudes toward patient safety policy

Mean score for knowledge about Patient Safety policy was 12.68 ± 3.40 from 18-point scale. About 38.7% nurses had knowledge score below this mean. Mean score for each attitude construct are summarized in Table 2. In general, nurses perceived a low risk of non-compliance to the Patient Safety policy (mean perceived risk 8.07 ± 1.89 of 16-point scale) and a low barrier of compliance to the Patient Safety policy (mean perceived barrier 8.66 ± 1.78 of 16-point scale). Knowledge and attitudes toward Patient Safety policy did not differ by sex and educational background (Table 3). Married nurses scored higher in knowledge but not in attitudes toward Patient Safety policy compared to single nurses.

However, knowledge, perceived risk, perceived severity, and perceived benefit differ significantly among different departments ($p < 0.05$, Table 4). In post-hoc analysis, critical care ward nurses had better knowledge than ER, inpatient ward, and outpatient clinic nurses ($p < 0.05$). Critical care ward nurses also had lower perceived risk than inpatient ward nurses ($p < 0.05$) and higher perceived severity than outpatient clinic nurses ($p < 0.05$). Critical care ward nurses had higher perceived benefit compared to inpatient ward and outpatient clinic nurses.

Table 2. Mean Score for Knowledge and Attitudes toward Patient Safety Policy

	Knowledge	Perceived Risk /Susceptibility	Perceived Severity	Perceived Benefit	Perceived Barrier
N	124	124	124	124	124
Mean	12.68	8.07	13.64	13.64	8.66
SE of mean	0.30	0.17	0.20	0.19	0.16
SD	3.40	1.89	2.21	2.10	1.78
Minimum	6.00	4.00	4.00	4.00	4.00
Maximum	18.0	16.0	16.0	16.0	16.0

Table 3. Mean Knowledge and Attitudes According to Sex, Educational Background, and Marital Status

		Knowledge	Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier
Male	mean±SD	11.92±2.81	8.15±2.63	13.69±1.87	13.5±1.79	8.57±2.30
Female	mean±SD	12.88±3.52	8.05±1.65	13.62±2.30	13.67±2.18	8.68±1.63
	p-value	0.113	0.736	0.931	0.593	0.193
Diploma	mean±SD	13.08±3.43	7.92±1.87	13.77±2.10	13.98±1.84	8.50±1.40
Graduated	mean±SD	12.19±3.33	8.25±1.91	13.46±2.35	13.21±2.33	8.85±2.15
	p-value	0.089	0.272	0.550	0.094	0.994
Single	mean±SD	11.82±2.81*	8.00±1.71	13.85±1.86	13.46±1.74	8.48±2.02
Married	mean±SD	13.10±3.59*	8.10±1.98	13.53±2.37	13.72±2.26	8.74±1.66
	p-value	0.009	0.680	0.590	0.391	0.169

*significant at the 0.01 level

Table 4. Mean Knowledge and Attitude According to Unit of Work

	Knowledge	Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier
Emergency room	12.94±1.71	7.78±2.32	13.94±2.12	13.82±1.77	8.42±2.19
Inpatient ward	12.24±3.78	8.17±1.81	13.51±2.33	13.17±2.10	9.20±1.65
Critical care ward (ICU, PICU, NICU)	15.05±1.29	7.05±1.56	14.88±1.36	14.82±1.59	8.41±1.83
Outpatient clinic	9.57±2.67	7.68±0.82	12.15±2.36	12.26±2.49	8.42±1.53
Labor and Delivery	14.33±1.50	8.16±0.75	14.33±1.86	14.83±1.83	8.00±1.09
Operating room	11.31±4.12	8.47±1.86	12.82±2.19	13.36±2.08	8.78±2.20
Managerial office	15.33±1.87	9.11±2.02	14.22±1.85	14.22±1.56	8.11±1.05

Note: IVF clinic and hemodialysis unit are omitted from the analysis due to small number of sample. Post hoc analysis described within the text.

Correlation between socio demographics, knowledge, and HBM constructs

Age and length of work correlated positively to knowledge about Patient Safety policy (Spearman's $r=0.439$, p -value 0.000; and $r=0.400$, p -value <0.001, respectively). A positive and moderate correlation was also observed between knowledge vs. perceived severity ($r=0.394$, p -value <0.001) and knowledge vs. perceived benefit ($r=0.422$, p -value <0.001). There was a strong and positive correlation between perceived severity and perceived benefit ($r=0.725$, p -value <0.001). Thus, the more the nurses understood the impact of patient safety incident, the more they understood the benefit that would come if they comply with the Patient Safety policy.

Table 5. Spearman correlation coefficients between socio demographics and HBM constructs

		Perceived Risk	Perceived Severity	Perceived Benefit	Perceived Barrier	Age	Length of work	Knowledge
Perceived Risk	r	1						
	p-value	1						
Perceived Severity	r	-0.351**	1					
	p-value	0.000	1					
Perceived Benefit	r	-0.221*	0.725**	1				
	p-value	0.014	0.000	1				
Perceived Barrier	r	0.164	0.155	0.056	1			
	p-value	0.069	0.086	0.535	1			
Age	r	-0.029	0.005	0.119	0.106	1		

Length of work	p-value	0.753	0.952	0.187	0.240	1		
	r	-0.118	0.122	0.258**	0.059	0.692**		
Knowledge	p-value	0.192	0.176	0.004	0.512	0.000	1	
	r	-0.147	0.394**	0.422**	0.279**	0.439**	0.400**	
	p-value	0.104	0.000	0.000	0.002	0.000	0.000	1

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

DISCUSSION

Our study highlights several important findings. Nurses in general perceived a low risk of non-compliance and a low barrier to comply with Patient Safety policy. Perceived benefit of compliance and perceived severity of non-compliance were good, and there was a strong and positive correlation between them. Knowledge was shown to have a moderate and positive correlation to perceived benefit and perceived severity. This study provides an insight on nurse's attitude toward Patient Safety policy.

Studies using HBM construct to evaluate the nurse's attitudes toward Patient Safety policy is still lacking. In one study measuring the HBM constructs in nurse's hand hygiene behavior [19], they found HBM was a good model to evaluate nurse's attitude.

This present study has several limitations. First, we didn't measure the actual behavior of nurses during delivery of care that comply or not comply with the principles of Patient Safety. We are aware that actual behavior on complying with the Patient Safety policy is a complex concept. We've only studied nurse's attitude or personal belief toward compliance to Patient Safety policy in one exact frame time. However, its effect on future behavior toward Patient Safety is not known. Second, our sample size is relatively small. Third, we collect our samples consecutively as randomization might be problematic. Thus, it may limit the generalizability of our results.

CONCLUSION

Our study provides an insight on nurse's attitude toward Patient Safety policy according to Health Belief Model. Our study also demonstrates that knowledge is an important factor that correlates with several aspects of attitude, i.e. perceived benefit and severity. The results of this study can serve as a reference for future study on Patient Safety policy as well as a base for adoption in designing policy in order to promote compliance toward Patient Safety among health care professionals.

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