Critical care nurses' knowledge, attitudes and practices on the usage of physical restrainer

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ABSTRACT

Background: Physical restraint is any measure or technique that prohibits an individual's body movement. Although physical restraint is one of the most common methods used to ensure patient safety in the intensive care units, its usage is an arguable practice. Involuntary immobilisation of a patient challenges patient's rights while over usage of physical restraints can lead to possible harm to the patients. Critical care nurses especially should make accurate decisions regarding the use of physical restrains if they are to ensure patient safety.

Objective: The objective of this study was to determine the knowledge, attitude, and practices of critical care nurses on usage of physical restrainer in a private hospital in Klang Valley.

Methods: This was a cross-sectional, quantitative descriptive study using the Physical Restraint Questionnaire (PRQ) to collect data from 103 registered nurses through simple random sampling in the Critical Care Unit of a private hospital.

Results: A total of 103 critical care nurses participated in this study. The nurses had moderate level of knowledge of physical restraint usage, 43.96 ± 4.05 (36 to 53), positive attitude towards the use of physical restraint, 30.47 ± 2.96 (24 to 39) and good practices on usage of physical restrainers, 38.88 ± 2.73 (29 to 43).

Conclusion: Findings revealed that majority of critical nurses have moderate knowledge, positive attitude and satisfactory practices on usage of physical restraint. However, continuous updates on usage of physical restraint and its legal implications are highly recommended to ensure critical care nurses are better informed before deciding to use physical restraint on their patients.

Introduction:

The intensive care unit (ICU) is one of the specialised units which deliver high-quality care services for patient needs. Thus, the management of care delivered, and the medical therapy process are very crucial for good patient management (Azizpour, Moosazadeh & Esmaeili, 2017). ICU patients are connected to equipment with many tubes and lines, making them prone to accidental self-removal of the medical devices. Patients who are admitted to ICUs generally have agitation and disorientation. Therefore, safety measures must be taken (Kaya & Dogu, 2018). One of the most common methods used to ensure patient safety in intensive care units is the use of physical restraints (Dolan & Looby, 2017).

Physical restraint is utilised to secure patients' correct position to ensure their movements under supervision, inhibit them from detaching medical devices such as tubes and drains, as well as causing harm themselves, encourage the practice of medical procedures and aid patients to be calm. In the ICUs physical restraints are frequently utilised for patients on mechanical ventilation support, to safeguard vital medical devices such as endotracheal tube (Unoki, Sakuramoto, Ouchi & Fujitani, 2019). According to Rose et al. (2016), mechanically ventilated patients were restrained at least once, up to the range of 75%, during their intensive care unit admission. However, physical restraints were considered as a care support to avoid patient fall, maintain gait control, or avoid unplanned removal of endotracheal tube or nasogastric tube. Nevertheless, over usage of physical restraints can lead to unpleasant

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effects to patient biochemically, physiologically, perception, behaviour, emotions as well as social nature (Lan et al., 2017).

In some studies, it has been found that the knowledge, attitudes and practices of nurses are inadequate in the application of physical restraints. A study done on Malaysian nurses' knowledge, attitude, intention and practice, and influencing factors on use of physical restraint, reported that less than half of the nurses considered alternatives to physical restraint and most of them did not understand the reasons for the physical restraint (Eskandari et al., 2017).

Physical restraint is widely used in the acute units of this hospital, especially for patients who are ventilated, restless, agitated and have potential risk of fall. Critical care nurses are often left to decide on possible preventive measures to be taken to prevent untoward incidences for the patients under their care such as falls, accidental dislodgement of endotracheal tube and removal of vital monitoring device as well as intravenous lines for lifesaving medications. Hence, the purpose of this study was to assess the knowledge, attitudes and practices of these nurses on the usage of physical restraints.

Methods

Study design, setting and sample

This cross-sectional descriptive study was conducted in a 40 bedded critical care unit of a leading private hospital in Selangor, with a target population of 122 critical care nurses. Criteria for participation included registered nurses who are currently working in the Critical Care Unit (CCU), Intensive Care Unit (ICU) and High Dependency Unit (HDU). Registered nurses who are working in non-critical care units, trainees and other allied health care professionals, were excluded from the study. A simple random sampling of 103 nurses who met the inclusion criteria and consented, were recruited and assessed for knowledge, attitude and practice on the usage of physical restraints using a self-reported questionnaire. Based on Raosoft sample size calculator, with 5% of margin error, 95% of confidence interval, 50% distribution rate and 10% attrition rate, the estimated targeted sample size required wass 102.

Measurement and instrument

The instrument to measure knowledge, attitude and practice on the usage of physical restraints, Physical Restraint Questionnaire, PRQ (Janelli et al., 2006; Eskandari et al., 2017), consisted of two sections, namely Sections A and B. Section A consisted of demographic and professional details such as gender, age, marital status, ethnicity, religion, years working in nursing, academic qualification; awareness of aggression management guideline, physical restraint training, awareness of hospital policy regarding use of restraints, information source regarding restraint and attendance to in-service restraint programme. Section B, consisted of 40 items on knowledge, attitude and practice on the usage of physical restraints. The knowledge section of the questionnaire consisted of 15 items (1 – 15), measuring nurses' knowledge on definition of physical restraint, indications for usage of physical restraint and its contraindications, with a four-point Likert scale ("Strongly agree" to "Strongly disagree). It consisted of positive and negative items. For negative items, reverse ratings were used. The score for the knowledge section varies from 15 to 60, with high scores representing more questions being answered accurately by participants. Score of 15-29 (< 50%) indicates poor knowledge level, score of 30-45 (50-75%) indicates moderate knowledge

level, and score of 46-60 (more than 75%) indicates good knowledge level.

The Attitude section consisted of 10 items demonstrating nurses' point of view in using physical restraints, with a four-point Likert scale ("Strongly agree" to "Strongly disagree:). Both strongly agree or agree responses, indicate positive attitude while "Disagree" or "Strongly disagree", are considered as negative attitude. The score for the attitude section varied from 10 to 40, with score of 10-23 (< 60%) indicating negative attitude while score of 24-40 (> 60%) indicate positive attitude.

The Practice section consisted of 15 items evaluating the nurses' practice on physical restraint usage and alternatives to physical restraint usage, with a three-point Likert scale (Always = 3, Sometimes = 2, and Never = 1). It consisted of both positive and negative items. For negative items, reverse ratings were used. The score for the practice section varied from 15 to 45, with score of closer to 15 - 22 (< 50%) indicating improper practices, score of 23 to 33 indicating satisfactory practices, while score of 34-45 (> 75%) indicating good practices on physical restraint usage.

Ethical considerations

Ethical approval was obtained from the ethics committee of the International Medical University (BN 1/2020 (PR-27), the management of the selected private hospital, and consent was obtained from the respondents prior to the conduct of the study. To ensure the anonymity and confidentiality of the respondents, the completed questionnaires were sealed in an envelope.

Pilot study

A pilot study was carried out in August 2020 on 30 nurses at the CCU of another branch of the private hospital. According to Conroy (2015), a pilot test sample size of 30 is enough to measure alpha reliability to validate the reliability and consistency of the adopted self-report questionnaires. A Cronbach's value of ≥ 0.70 was used as the acceptable value (Polit & Beck, 2017) while validity was determined by a three-member panel of expert that consisted of a Nursing manager of an ICU, an anaesthetist and an education consultant.

An excellent content validity index (CVI) value should be ≥ 0.78 while S-CVI/UA and S-CVI/Ave should be 0.80 and 0.90 or higher (Jingcheng et al., 2012).

Validity and reliability testing

The result of the pilot study showed that the Cronbach's value for Knowledge, Attitudes and Practices, were 0.701, 0.733 and 0.772, respectively, which indicated that the instrument is reliable while I-CVI of 0.90, S-CVI/UA of 0.70 and S-CVI/ Ave of 0.90, implied that the instrument is considered valid to measure the knowledge, attitudes and practices on physical restraint usage.

Data collection procedure

After obtaining approval from IMU-JC Research and Ethics committee and hospital management, data collection was carried out from 1st to 7th September 2020. Explanation about the purpose and nature of the study was provided to the participants before informed consent was obtained from the participants. Participants were also informed that their participation was on voluntary basis and they had the right to withdraw anytime from this study. Participants were given 10-15 minutes to complete the questionnaire which was then placed into an envelope provided and submitted to the ward sister in-charge to ensure confidentiality.

Data Analysis

The demographic data of the study was analysed using IBM SPSS Statistics version 25.0. Demographic data and the research variables data were analysed using descriptive statistics including frequency, mean, standard deviation, percentages. Tables were used to illustrate the findings of the study according to the American Psychological Association (APA) format.

Results:

Demographics of sample

A total of 103 nurses (response rate of 100%) participated in the study. Most of the nurses were quite young (M = 29.65 SD = 5.01), single (63.1%), Chinese (47.6%), had Diploma qualification (47.6%) and had less than 10 years of working experience (M = 7.36 SD = 4.70). Only 16.5% attended the in-service restraint usage programme (Table I).

Table I: Demographic and professional characteristics of respondents (n = 103)

Variables	Categories	n (%)		M±SD
Gender	Male Female	15 88	(14.6 %) (85.4 %)	N/A
Age	21 – 25 26 – 30 31 – 35 36 – 40 41 and above	20 46 24 10 3	(19.4 %) (44.7 % (23.3 %) (9.7 %) (2.9 %)	29.65 ± 5.01
Marital Status	Single Married	65 38	(63.1 %) (36.9 %)	N/A
Ethnicity	Chinese Malay Indian Others	49 32 19 3	(47.6 %) (31.1 %) (18.4 %) (2.9 %)	N/A
Religion	Muslim Buddhist Christian Hindu Others	34 36 20 12 1	(33.0 %) (35.0 %) (19.4 %) (11.7 %) (1.0 %)	N/A
Years working in nursing	2 years and below 3 – 5 years 6 – 10 years 11 years and above	13 30 39 21	(12.6 %) (29.1 %) (37.9 %) (20.4 %)	7.36 ± 4.70
Highest Nursing qualification	Diploma Post basic Bachelor's in nursing Master's in Nursing and Above	49 28 24 2	(47.6 %) (27.2 %) (23.3 %) (1.9 %)	
Attended in-service restraint programme	Yes No	17 86	(16.5%) (83.5%)	

Knowledge of physical restraint usage

The mean total score of the 15 items used to measure the knowledge of physical restraint usage was 43.96 ± 4.05 (36 to 53), indicating a moderate level of knowledge with total scores ranging from 36 to 53. Most of the nurses (n = 99, 96.1%) knew that physical restraint is a vest or safety attire used to prevent injuries. However, other than knowing that the indications for the use of a physical restraint is only allowed if it is required to protect patients or other people from injuries and the importance of documentation of the records of physical restraint usage in every shift, the responses for knowledge on the indications for using physical restraint is rather concerning. A total of 53 nurses (51.5%) indicated the usage of physical restraint if they needed to supervise patients closely and care for confused or disorientated patients, as good reasons for the use of physical restraint.

Only 88 nurses (85.4%) indicated that patients have the right to refuse to be restrained while only 45 nurses (43.7%) knew that physical restraint requires a doctor's order. In addition, only 57 (55.3%) nurses knew of the serious implication of restraining patients while lying down facing up on the bed. More worrying was that only 29 (28.2%) of the nurses knew that there had been deaths related to the use of vest physical restraint. A total of 67 (65%) perceived that there are no other good methods of restraining available other than physical restraint.

This implied that although the overall level of knowledge on usage of physical restraint is moderate, knowledge on the indications and serious implications of inappropriate usage of physical restraint is concerning and needs to be addressed (Table II).

Table II: Knowledge of nurses towards the use of physical restraint (n = 103)

Knowledge Items	Responses			
	Correct Answer	Answered Correctly n (%)	M±SD	Min to max score
1. Physical restraint is a vest or safety attire used to prevent injuries.	3 or 4	99 (96.1%)	3.32 ± 0.55	2 - 4
2. Physical restraint is only allowed if it is required to protect patients or other people from injuries.	3 or 4	99 (96.1%)	3.40 ± 0.57	2 - 4
3. Physical restraint must be used when a nurse is not capable of supervising a patient intensively.	1 or 2	53 (51.5%)	2.44 ± 0.89	1 - 4
4. Patients have right to refuse to be restrained.	3 or 4	88 (85.4%)	3.07 ± 0.66	1 - 4
5. Physical restraint requires a doctor's order.	3 or 4	45 (43.7%)	2.35 ± 0.94	1 - 4
6. Confusions or disorientation are good reasons for the use of physical restraint.	1 or 2	53 (50.5%)	2.45 ± 0.93	1 - 4
7. Physical restraint should be fitted and secured comfortably.	3 or 4	101 (98.1%)	3.51 ± 0.54	2 - 4
8. Patients are not to be restrained while lying down facing up on the bed for fear of spluttering / choking.	3 or 4	57 (55.3%)	2.55 ± 0.96	1 - 4

Table II: Knowledge of nurses towards the use of physical restraint (n = 103) [con't]

Knowledge Items	Responses			
	Correct Answer	Answered Correctly n (%)	M±SD	Min to max score
9. When a patient's movement on the bed is restrained, physical restraint must not be tied to the sidebars of the bed.	3 or 4	79 (76.7%)	3.03 ± 7.07	2 - 4
10. Nurses can be prosecuted for threatening the patients if they use physical restraint when it is not required.	3 or 4	84 (81.6%)	3.03 ± 0.80	1 - 4
11. Records of usage should be kept for each patient who is restrained in every shift.	3 or 4	99 (96.1%)	3.39 ± 0.56	2 - 4
12. Doctor's instruction on the use of physical restraint must be specific.	3 or 4	83 (80.6%)	3.06 ± 0.78	1 - 4
13. In emergencies, nurses are allowed to use physical restraint on patients without any doctor's instruction	3 or 4	97 (94.2%)	3.31 ± 0.64	1 - 4
14. No other good methods instead of physical restraint exist.	1 or 2	67 (65%)	2.21 ± 0.85	1 - 4
15. There have been deaths related to the use of vest physical restraint.	3 or 4	29 (28.2%)	2.04 ± 0.85	1 - 4
Total score (min to max 15-60)			*43.96± 4.05*	*36-53*

Note: Likert scale: 1 = Strongly disagree   2 = Disagree   3 = Agree   4 = Strongly agree

Attitude of nurses towards the use of physical restraint

A total of 10 items were used to measure the attitude of nurses towards the use of physical restraint. The total score range of 24 – 39 out of 40, with mean total score of 30.47 ± 2.96, indicated a positive attitude towards the use of physical restraint. Majority of nurses perceived that family members have the right to refuse the use of physical restraint (n = 89, 86.4%), nurses have the right to refuse using physical restraint on patients (n = 89, 86.4%), and patients have the right to refuse being restrained (n = 99, 96.1%). Most of them (n = 89, 86.4%) felt uncomfortable if patient became more upset after being restrained and felt embarrassed when family

members enter the restrained patient's room and they have not been informed (n = 73, 70.9%).

Majority of nurses (n = 101, 98.1%) felt that hospital is responsible to adhere to the laws on the use of restraints to ensure patient safety and are aware of the importance of communicating to the patients that the physical restraint was required out of concern for them (n = 102, 99.9%). A total of 88 (85.4%) nurses indicated their empathy towards the restrained patient. Overall, although the total scores indicated a positive attitude towards the use of physical restraint, several items that reflect a negative attitude are of concern and need to be addressed (Table III).

Table III: Attitude of nurses towards the use of physical restraint (n = 103)

Attitude Items	Responses n (%)					
	Strongly Disagree	Disagree	Agree	Strongly Agree	M±SD	Min to max score
1. I feel that family members have the right to refuse the use of physical restraints.	1 (1.0)	13 (12.6)	62 (60.2)	27 (26.2)	3.12 ± 0.65	1 – 4
2. I feel that nurses have the right to refuse using physical restraint on patients.	4 (3.9)	10 (9.7)	68 (66.0)	21 (20.4)	3.03 ± 0.68	1 – 4
3. If I were a patient, I feel that I have the right to refuse being restrained.	1 (1.0)	3 (2.9)	69 (67.0)	30 (29.1)	3.24 ± 0.55	1 – 4
4. I feel discomfort when placing a patient on restrainer in front of my colleagues.	19 (18.4)	37 (35.9)	40 (38.8)	7 (6.8)	2.34 ± 0.86	1 – 4
5. I feel embarrassed when family members enter the restrained patient's room and they have not been informed.	16 (15.5)	14 (13.6)	59 (57.3)	14 (13.6)	2.69 ± 0.90	1 – 4
6. The hospital is responsible to adhere to the laws on the use of restraints to ensure the safety of a patient.	-	2 (1.9)	55 (53.4)	46 (44.7)	3.43 ± 0.54	2 – 4

Table III: Attitude of nurses towards the use of physical restraint (n = 103) *(cont'd)*

Attitude Items	Responses n (%)					
	Strongly Disagree	Disagree	Agree	Strongly Agree	M±SD	Min to max score
7. I will feel a little uncomfortable if a patient becomes more upset after being restrained.	3 (2.9)	11 (10.7)	69 (67.0)	20 (19.4)	3.03 ± 0.65	1 – 4
8. I feel that it is important to tell restrained patients that I am concerned about them.	-	1 (0.9)	56 (54.4)	46 (44.7)	3.44 ± 0.52	2 – 4
9. Patients suffer from feeling inferior when they are restrained.	1 (1.0)	14 (13.6)	60 (58.3)	28 (27.2)	3.12 ± 0.66	1 – 4
10. Generally, I feel confident to perform physical restraint for patients.	-	21 (20.4)	57 (55.3)	25 (24.3)	3.04 ± 0.67	2 – 4
Total score (min to max 10-40)					**30.47 ±2.96**	**24 – 39**

Note: Likert scale: 1 = Strongly disagree   2 = Disagree   3 = Agree   4 = Strongly agree

Practices of nurses towards the use of physical restraint

Most of the nurses used physical restraint only as a last resort (n = 98, 95.1%). Before using the physical restraint on the patient, the nurses will find out the purpose for the restraint (n =102, 99%) and if the nurses felt that the patient does not need to be restrained, most of them will pose their suggestion to the doctor (n = 100, 97.1%). The nurses responded to the signal light or the call for 'help' from any restrained patient immediately (n = 102, 99%). All the nurses examined restrained patients at least on a two-hourly basis and when giving personal care to the restrained patients, patients' skin was examined to identify parts which are red. Patient and family members were well informed on the need for the restraint although only 80 nurses (77.7%) informed the family members or visitors when the restraint will be removed. Most of the nurses (n = 82, 79.6%) perceived that all patients in the state of disorientation must be restrained. All of them agreed that they will strive together to find ways to control the behaviour of patients through methods other than restraints. Most of the nurses prefer to give sleeping pills rather than restraining the patients (n = 83, 80.6%).

In general, the nurses seemed to have good practices on usage of physical restraints, as reflected by total scores ranging from 29 – 43 out of 45 and mean total scores of 38.88 ± 2.73 (Table IV).

Table IV: Practices of nurses towards the use of physical restraint (n = 103)

Attitude Items	Responses n (%)			M±SD	Min to max score
	Disagree	Agree	Strongly Agree		
1. I try a few nursing methods before physically restraining the patient.	5 (4.9%)	23 (22.3%)	75 (72.8%)	2.68 ± 0.56	1 – 3
2. Before using the physical restraint on the patient, I will find out why I need to do so.	1 (1.0%)	11 (10.7%)	91 (88.3%)	2.87 ± 0.36	1 – 3
3. When I feel that the patient does not need to be restrained, I pose my suggestion to the doctor.	3 (2.9%)	28 (27.2%)	72 (69.9%)	2.67 ± 0.53	1 – 3
4. I respond to the signal light or the call for 'help' from a restrained patient immediately.	1 (1.0%)	15 (14.6%)	87 (84.5%)	2.83 ± 0.40	1 – 3
5. I examine restrained patients at least on a two-hour basis.	-	8 (7.8%)	95 (92.2%)	2.92 ± 0.27	2 – 3
6. When giving personal care to the restrained patients, I examine their skin to find parts, which are red or bruised.	-	6 (5.8%)	97 (94.2%)	2.94 ± 0.24	2 – 3
7. I tell the patients why they are restrained.	-	8 (7.8%)	95 (92.2%)	2.92 ± 0.27	2 – 3
8. I tell the family members / visitors why the patient is restrained.	-	5 (4.9%)	98 (95.1%)	2.95 ± 0.22	2 – 3
9. I inform the patient when the restraint will be removed.	2 (1.9%)	12 (11.7%)	89 (86.4%)	2.80 ± 0.45	1 – 3
10. I inform the family members / visitors when the restraint will be removed.	23 (22.3%)	89 (86.4%)	23 (22.3%)	2.84 ± 0.41	1 – 3
11. Physical restraint must be used in the hospital to prevent the patients from injuring themselves.	-	30 (29.1%)	73 (70.9%)	2.71 ± 0.46	2 – 3
12. All patients in the state of disorientation must be restraint.	21 (20.4%)	62 (60.2%)	20 (19.4%)	1.99 ± 0.63	1 – 3
13. All staff will strive together to find ways to control the behaviour of patients through methods other than restraints.	-	37 (35.9%)	66 (64.1%)	2.64 ± 0.48	2 – 3
14. When I need to restrain a patient, it is available in my unit.	10 (9.7%)	32 (31.1%)	61 (59.2%)	2.50 ± 0.67	1 – 3
15. I prefer to give sleeping pills rather than restrain the patients.	20 (19.4%)	56 (54.4%)	27 (26.2%)	2.07 ± 0.68	1 – 3
Total score (min to max 15-45)				**38.88 ± 2.73**	**29 – 43**

Note: Likert scale: 1 = Never   2 = Sometimes   3 = Always

Discussion

Knowledge of nurses towards the use of physical restraint

Physical restraint delivers good outcome to patient when it is applied properly. Inappropriate application of physical restraints and impediment failures are the main causes for physical harm as well as deaths. From the findings of the present study, majority of the critical care nurses have moderate knowledge level about physical restraint, with a mean score of 43.96 (SD = 4.05). However, the critical care nurses were perceived to have a lack of understanding regarding the application of physical restraint. Majority of nurses (56.3%, n = 58) do not agree that physical restraint required doctor's order, which implied that nurses perceived themselves to be the main decision maker in critical care units on utilisation of physical restraint based on their clinical observation. This finding is similar to a study done by Eskandari et al. (2017) where nurses initiated and terminated the use of physical restraint depending on their clinical judgement which as a result may place nurses in a difficult position especially in the aspect of legality and scope of nurses responsibility. This may be due to the fact that most of them (83.5%, n = 86) did not attend any in-service training programme, and lack of education pertaining to physical restraint.

In the current study, majority of the critical care nurses, 96.1% (n = 99) acknowledged that physical restraint can be used to prevent injuries and is only allowed to be used on patients for the purpose of safeguarding the patients or others from harm. When physical restraint is applied using the correct method, it can create a positive effect to patients (Dasanayake et al., 2019). Besides, 96.1% (n = 99) nurses understood the importance of documenting the usage of physical restraint for patient, and 80.6% (n = 83) acknowledged that consultant's order on applying physical restraint must be precise. Physical restraint is an important medical therapy, therefore, documentation on indication, date and time of initiation of physical restraint, which types of restraint utilised is essential. Institutions can strengthen this practice in hospital policy to improve awareness and compliance of nurses.

A total of 44.7% nurses in this current study were unaware that if patients are restrained in a prone position, there will be an increased risk of spluttering or choking. This is a complication of physical restraint that was not taken into consideration by most of the nurses. This implied that the nurses lack knowledge regarding the current Standard of Practice (SOP) for safety aspects on the usage of physical restraint in the hospital. This finding is similar to the study by Dasanayake et al. (2019) which revealed that two third of nurses in their study are unaware of the danger of restraining patient in the prone position.

There is potential risk of death on physical restraint. However, the study findings showed negative responses on two items under knowledge section. Only 28.2% (n = 29) were aware that improper usage of physical restraint can result in death. Nearly half of the nurses (48.5%, n = 50) utilised physical restraint when they were unable to provide close monitoring of patients or when they felt that patients were becoming too confused or disorientated. Nurses need to be fully aware of physical restraint consequences in order to prevent inappropriate usage that may lead to an increased risk of mortality and morbidity.

Also, inadequate knowledge on safety measures of physical restraint may lead to improper practices that may put patients at risk. On-job training and enhancement of hospital policy is important to improve nurses' knowledge on the indication and precautions due to nurses being the primary user of physical restraint on patients.

Attitude of nurses towards the use of physical restraint

Attitude is a predisposition in relation to vigorous and guiding impact. Attitude is an important element that act as a major part in transforming knowledge into practice (Kaya & Dogu, 2018). From the findings of the present study, all the nurses, 100% (n = 103) have a positive attitude towards the usage of physical restraint. Similar finding was reported by Wang et al. (2018), due to the emphasis on ethical aspects of usage of physical restraint during in-service training or nursing related programme. However, in contrast, findings by Kaya and Dogu (2018) revealed that nurses' attitude level was not appropriate. This may be due to nurses' belief that applying physical restraint to patient was not ethically accepted (Ahmed, Mourad & Mahmoud, 2019).

In this current study, majority of the critical care nurses, 96.1% (n = 99) agreed that patients have the right to refuse physical restraint, 86.4% (n = 89) of nurses agreed that patient's family members can refuse restraint usage on patient, while 98.1% (n = 101) agreed that the hospital is responsible to adhere to the law on usage of physical restraint. This finding implied that nurses are fully aware and diligent on patient's right. Therefore, this will ensure that legal and ethical implication can be avoided. The findings are similar to Elhameed and Eleman (2020) that revealed that nurses are required to be cautious on patient rights and perform the appropriate nursing interventions. Discussion and education on physical restraint are required to influence nurses' attitude and improve their understanding (Wang et al., 2018).

On the other hand, 54.3% (n = 56) nurses do not feel comfortable to perform physical restraint in front of their working peers. This finding is similar to the study done by Suliman et al. (2017) and Wang et al. (2018). This is probably due to the fact that nurses felt the importance to ensure patient safety such as preventing patients from removing medical devices or fall, therefore they apply physical restraint on patients. However, majority of them 70.9% (n = 73) felt embarrassed when patient's family members entered a patient's cubicle and were not informed that the patient was restrained. Most of them 86.4% (n = 89) felt discomfort when patient became upset when restrained while 85.5% (n = 88) were aware that patient can suffer from low dignity when being restrained. This revealed that nurses are in a dilemma, they are unfavourable on using physical restraint but required for prevention of treatment interference. Similar finding was reported by Gunawardena and Smithard (2019), where nurses were struggling to decide between responsibilities and respecting patient autotomy. Education is needed to ensure nurses understood the indication for physical restraint, utilisation of physical restraint on correct occasions and when necessary to prevent patient from suffering physically and psychologically.

Practices of nurses towards the use of physical restraint

Findings on practice of nurses towards the use of physical restraint revealed that all the nurses have satisfactory practices towards usage of physical restraint. This study finding is similar to the study done by Kaya

and Dogu (2018) and Wang et al. (2018). Nurses need to be well informed on the ethical issues concerning the utilisation of physical restraints. Improper practices put nurses at risk to legal or ethical issues with family members and hospitals (Suliman, Aloush & Al-Awanreh, 2017). Pradhan et al. (2018) supported the evidence that nurses who are working in tertiary care hospitals are on extra alert on the possible legal and ethical problems associated with the use of physical restraints.

In this study, majority of the nurses (72.8%, n = 75) responded positively on opting for alternatives before applying physical restraint to patient, while 88.3% (n = 91) indicated that they will find out the reasons on the need for physical restraint before deciding on applying it. Despite being challenging, nurses in this current study, did attempt to search for appropriate approaches to patient care in order to respect patients' autonomy as well as to avoid harmful effect of physical restraint, and legal and ethical complications for nurses and the institution. Gunawardena and Smithard (2019) reported that nurses' decision to minimise the use of restraints is determined by looking into the actual reason for using physical restraint, assessment of patients' condition, and rectifying potential reason and hazards.

On the other hand, only 2.9% (n = 3) nurses posed their opinion to the consultant when patients do not actually require physical restraint. This may be due to the reason that nurses perceived not being confident to inform consultant on their clinical judgement, therefore they solely follow the instructions. However, nurses in the Critical Care Units being specially trained to care for the critically ill, should be competent in the skill of applying critical thinking on their practice, and they need to be confident to inform the consultant on any

clinical changes in patients including recommending relevant measures in patient care to the consultants. Besides, majority of them, 80.6% (n = 83) preferred to administer sleeping pills for patient instead of restraining them. This demonstrated that nurses have insufficient knowledge on chemical restraint, therefore education on pharmaceutical effect especially on sedation and antipsychotic drugs to prevent complications such as cognitive decline and increased risk of cerebral vascular accident. Nurses are the primary care giver to patients, and they spent more time nursing them as compared to other healthcare providers, therefore, evidence-based practices are important to deliver better patient care service (Eskandari et al., 2018). Cooperation between nurses and consultants is important to improve patient care service.

The current study also revealed a positive finding on certain nursing practice items related to the use of physical restraint. Majority of the nurses (84.5%, n = 87) responded immediately to signal light or call for assistance from restrained patients. Nurses in the current study understood that patients were helpless and required assistance due to restricted movement from physical restraint. Most of them (92.2%, n = 95) performed a two-hourly assessment on restrained patients and examined restraint sites for any redness or bruises. This revealed that nurses in this study were aware that physical restraint can disrupt circulation, and cause injury such as oedema, bruises, redness at the restrained limb. This finding was similar to the study finding of Pradhan, Lama, Mandal and Shrestha (2018) that stated majority of nurses were aware and always examined patient's skin condition when performing patient care. It is important that nurses focus on patient's physiological and physiological needs to impede possible side effect from physical restraint (Eskandari et al., 2018).

In addition, most nurses (n = 95, 92.2%) explained to the patient the reason for being restrained, 95.1% (n = 98) informed patient's family members on the indication of physical restraint for the patient, and reassured patient and family members on when the physical restraint will be removed. The findings revealed that majority of the critical care nurses understood the importance of communication and reassurance. This is important to improve patient-nurse relationship and to gain cooperation from patient and family members, as well as reputation of the institution. Communication is essential especially when patient is on physical restraints (Pradhan et al., 2019). In contrast, a study done by Mahmoud (2016), revealed that majority of the nurses did not frequently examine patient's skin condition and did not communicate well with patient. This will increase the risk of physical injury and emotional disturbance for patients.

Limitation

The limitation of this study was that it only involved registered nurses from one private hospital in Selangor. Thus, the results may not be representing the registered nurses from other hospitals as well as be generalised to a larger population.

Conclusion

The study findings revealed that majority of the critical nurses have moderate knowledge, with positive attitude and satisfactory practices on usage of physical restraint. However, they still require improvement in certain aspects. It is recommended that a compulsory in-house training on usage of physical restraint be considered as part of micro credentialing for critical care nurses. Legislative aspects including patients' right and the implication on usage of physical restraint must be made clear to the nurses so that they are better informed and can make better decisions before considering the use of physical restraint on patients. Management can play an important role in supporting and ensuring patient safety by ensuring enough nurse-patient ratio. A clear standard guideline on the usage of physical restraints including its indication, monitoring and documentation must be developed and disseminated not only to nurses in the critical care units, but all healthcare personnel involved in patient care. This will ensure safe and quality patient care.

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