

# Perceptions of nurses on inter-shift handover: A descriptive study in Hospital Kuala Lumpur, Malaysia

Diane Woei Quan Chong, MD<sup>1</sup>, Iqbal Ab Rahim, MD<sup>1</sup>, Baljit Kaur Jaj, BN<sup>2</sup>, Zainab Ali, BN<sup>3</sup>, Azizul Nordin, BNSc<sup>4</sup>, Noor Dayanawali Abd Majid, BN<sup>5</sup>, Ainah Jusoh, AdvDip<sup>6</sup>

<sup>1</sup>Institute for Health Systems Research, National Institutes of Health, Ministry of Health Malaysia, <sup>2</sup>Department of General Surgery, Hospital Kuala Lumpur, Ministry of Health Malaysia, <sup>3</sup>Department of Anaesthesia and Intensive Care, Hospital Kuala Lumpur, Ministry of Health Malaysia, <sup>4</sup>Nursing Practices Control Unit (Hospital), Nursing Division, Ministry of Health Malaysia, <sup>5</sup>Department of General Medicine, Hospital Kuala Lumpur, Ministry of Health Malaysia, <sup>6</sup>Dato' Keramat (Setiawangsa) Health Clinic, Federal Territories of Kuala Lumpur and Putrajaya Health Department, Ministry of Health Malaysia

## ABSTRACT

**Introduction:** The quality of information and efficiency in the practice and care environments are important aspects of nursing care. The use of a reliable and valid scale can monitor the quality of handover and provide information for continuous improvement of practice. This study aims to describe the perception of nurses, on the domains of quality of information, efficiency, interaction and support and patient involvement.

**Method:** A cross-sectional descriptive study was conducted among 450 nurses from 37 wards in Hospital Kuala Lumpur. Nurses on shift duty were recruited by convenience sampling from the Medical, Surgery, Obstetrics & Gynaecology, Orthopaedic and Paediatric wards. Using a validated questionnaire (Handover Evaluation Scale), nurses self-rated their perceptions using a 7-point scale and provided open-ended responses to the strengths and challenges that they faced. Descriptive and inferential analyses were done while open-ended questions were summarised based on key themes.

**Results:** A total of 414 nurses completed the survey (92.0% response rate). Nurses had an overall mean (SD) perception score of 5.01 (SD 0.56). They perceived good interaction and support during handover and on the quality of information that they received, with mean scores of 5.54 (SD 0.79) and 5.19 (SD 0.69), respectively. There was an association between the departments where the nurses worked and their overall perceptions on nursing handover ( $p < 0.001$ ). Interruptions being the most common theme emerged from the open-ended section.

**Conclusion:** Despite having substantial interaction and support amongst nurses, opportunities for improvements were noted. Improvements in the quality of handover information and reducing interruptions should be the main emphases as these were perceived to be essential in the current handover practices by nurses.

## KEYWORDS:

*Nursing handover, social perception, quality improvement, organisational efficiency*

## INTRODUCTION

Handover is a significant nursing task, and it was estimated that nurses were involved in 40-70% of the total transfer and discharge handovers of patients in hospitals.<sup>1</sup> Furthermore, inter-shift handover of patients can occur at least three times daily for some patients; and maybe more depending on the setting and needs of the patients. Hence, an effective nursing handover is critical to the quality, safety, and continuity of patient care, and to align the orientation of new nurses reporting for duty.<sup>2,3</sup> Numerous terminologies have been used internationally to refer to this process of information transfer, and it includes handover, pass over, handoff and transfer of care.<sup>4,5</sup> Herein, we use the term 'handover' to refer to 'a designated time when nurses, at the end of their shift, transfer their responsibility to oncoming nurses by communicating updated information about the condition and symptoms of their patients.

However, handover often varies in style and method. Nurses, like most healthcare professionals, may receive no formal training in the handover process other than by modelling from their peers and superiors.<sup>2</sup> An effective exchange of information about patient during nursing inter-shift handover should be able to deal with the identified key barriers of the lack of structure and poor communication, in order to avoid the loss of information of vital patient care.<sup>6</sup> The potential repercussions of ineffective handover include wrong treatments, delay in medical diagnosis, life-threatening adverse events, the complains from patients, increase in healthcare expenditure and longer hospital stay.<sup>2</sup>

An effective nursing handover process and practices, and accurate clinical information handover, has been recognised to be of great importance for the continuity and safety of patient care.<sup>6-8</sup> However, determining the most effective handover practice in nursing care remains uncertain.<sup>2</sup> Considering the frequency of inter-shift handovers by nurses and the recognised risk of ineffective handover process, it is therefore essential to explore factors or barriers that hinder effective handover. While most technical aspects such as communication barriers, standardisation of methods and training issues have been researched in many papers, little is known regarding the perception of nurses on their practise during inter-shift handover, especially in Malaysia. A study

This article was accepted: 06 October 2020

Corresponding Author: Fathullah Iqbal Ab Rahim

Email: fathullah@moh.gov.my

done in northeastern United States of America found that nurses were satisfied with the handover practices. However, that study population was among nurses in a private tertiary healthcare setting.<sup>9</sup> Over 75% of in-patient utilisation in Malaysia were from the public health sector, and it has remained consistent over the last decade.<sup>10</sup>

Therefore, we aimed to examine the perception of nurses from a public tertiary hospital on inter-shift handover, specifically on the quality of information, efficiency, interaction and support as well as patient involvement.

## MATERIALS AND METHODS

### *Study design*

This study was a descriptive cross-sectional study conducted to examine the perception of nurses towards inter-shift handover practices in Hospital Kuala Lumpur (HKL), which is Malaysia's national tertiary referral centre. Data was collected in September 2017.

### *Study population and setting*

The study population were 450 nurses from 37 wards (14 Medical wards, four Surgery wards, three Orthopaedic wards, six Obstetrics and Gynaecology wards, and ten Paediatric wards) in HKL. This study site was chosen as most cases admitted to the setting were patients with multiple comorbidities and complex conditions requiring optimum exchange of information. HKL is a 2115-bedded facility which provided 41 subspecialty services.<sup>11</sup> Approximately 4000 nurses worked in the hospital (inclusive of the administrative roles, in-patient wards, outpatient departments, labour rooms and operating theatres), with three shifts per day for the ward nurses. We selected these wards to reflect the distribution of nurses in the study site.

Handovers were conducted based on a general nursing practice guideline which was further tailored to each specific requirements of the various departments. The language of communication used in the hospital was a mixture of English and Bahasa Malaysia. Family members of patients were often not involved during handovers, as the shift change was scheduled to be outside of visiting hours. The target population were nurses on shift duty (7 to 10 hours per shift) and provided in-patient clinical services (clinical role) in the Medical, Surgery, Orthopaedic, Obstetrics and Gynaecology and Paediatric wards. We used convenience sampling; and included nurses who were able to read and understand English while excluding acute and critical care wards as they had a different operational and care environment as compared to the general wards. English literacy was essential, as the adopted survey instrument was in English.

These nurses had completed at least accredited basic nursing courses and registered in the Nursing Register.<sup>12</sup> Some of the nurses may also have completed accredited post-basic education such as midwifery and paediatric care. We proportionally distributed questionnaires to all 450 nurses in the study units and 414 completed questionnaires were returned.

### *Ethical consideration*

All participation was voluntary and the participants were informed about the aim of the research and survey procedure, and they all provided written informed consent for the anonymous response; anonymity and confidentiality of participants are assured. Ethical approval was granted by the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia ((5) KKM/NIHSEC/P17-932).

### *Data collection approach*

Data collection was conducted on one day only in each ward to ensure all nurse submitted only one questionnaire. The research team distributed the survey questionnaire, consent forms and a sealed box to the sister-in-charge of each of the ward (ward sister), who then distributed the questionnaire and consent forms to the nurses in their respective wards. All nurses were invited to participate in the survey without coercion at the end of their shift. The ward sisters ensured that the participating nurses were fully briefed before filling up the questionnaire, as required. The questionnaire was completed manually, by pen and paper. Upon completion, the anonymous survey questionnaires were returned into a sealed box. The research team collected the sealed containers and consent forms within two days later.

### *Study instrument*

We adopted the Handover Evaluation Scale (HES) with permission. The HES is a questionnaire consisting of 17 items within four subscales. It examines various domains of nursing handover practices such as comprehensiveness and relevance of information, the efficiency of the process, ability to discuss and clarify information and involvement of patients in the handover, which is in line with our study objective. Furthermore, HES has been used in various large healthcare settings for the evaluation of perception of nurses of their handover practices. Thus, HES was suitable for use as our study population performed bedside, written (manual, not electronic) and face-to-face verbal handover using standardised and structured approach within each ward.

The questionnaire was developed in 2008<sup>13</sup> and revised in 2012.<sup>4</sup> O'Connell and colleagues from Australia established the psychometric properties of the self-explanatory structured questionnaire. It has good reliability for its three out of four subscales (Cronbach alpha of 0.80 for quality information, 0.86 for interaction and support, 0.67 for efficiency and 0.69 for patient involvement). Subscale patient involvement was not strongly related to other subscales.<sup>4</sup> However, we retained the items as bedside handover is a practice in this study setting.

The final questionnaire, which consisted of three sections, collected demographic and the perception of inter-shift handover practices of participants. The first section contained items about the demographic characteristic such as age, years of nursing experience, duration of service in the healthcare facility, current work areas (departments), highest education level and time spent (in minutes) preparing for handover. The second section was HES with 17 items. Participants had to answer on a seven-point scale ranging from 1="strongly disagree" to 7="strongly agree". Data were coded one to seven. Reverse scores were given for four

negatively worded items such that higher scores indicated positive perceptions and lower scores reflected negative perceptions of handover. These included items such as “important information not always given”, “information not relevant to patient care”, “handover take too much time”, and “interrupted by patient and others”. The third section required the participants to provide open-ended statements based on their perceptions of the strengths and limitations of the current handover practices.

The overall score was derived by calculating the average score for all items in the HES. Scores for the subscales of HES were derived by calculating the average score for all items in the particular subscale. As the study was conducted in English, we pre-tested the instrument among 10 nurses in a separate tertiary referral hospital with a similar setting to evaluate the comprehension of nurses of the survey instrument. Minimal statement modification and format editing were done. We excluded the pre-test samples from the analysis.

#### Data analysis

The data was analysed by Stata, version 13.1. Demographic characteristics of the participants were described using frequencies and percentages for categorical variables, and medians and inter-quartile range for continuous variables. Pearson's correlation was used to determine the strength of the relationship between overall score and demographic characteristics of the participants. Independent t-test was used for the comparison of the mean scores of two groups, and one-way analysis of variance (ANOVA) was used to compare the mean scores of more than two groups (current department). The difference between more than two groups was further tested with the Tukey's test to determine which group contributed to the differences. A p-value of <0.05 was considered significant.

Data transcription and analysis for the open-ended question were carried out after all questionnaires were collected. All open-ended answers were typed into Microsoft Excel to facilitate data management and coding process. Answers that were written in the mixed language of Bahasa Malaysia and English were typed 'as is' without translations, but coded in English. An open coding approach was applied to the open-ended statements at the first order coding before subsequent grouping in second order coding. The thematic analysis approach was carried out in the third order coding. The coding process was done independently in two groups of three persons, during which the same statements was read by the two groups who coded it separately, followed by a consensus among the researchers before the codes and statements were regrouped into major themes and categories. The selected quotes in the mixed language were translated into English for report writing and publication purposes.

## RESULTS

### General characteristics

In this study, a total of 414 nurses completed the survey with a 92.0% response rate. Majority of the participants were 30 years old and below (74.2%). The duration of nursing experience range was 0.3 to 29.8, with a median (IQR) of 3.8

(5.5) years. A similar pattern was observed for the number of years participants had worked at the healthcare facility with a median of 3.6 (5.1) years. A quarter of the participants were from the Medical (28.3%) and Paediatric (25.4%) departments, respectively (Table I).

### Nurses' perception of inter-shift handover practices

The overall mean score was 5.01 (SD 0.56). The participating nurses reported better perception of interaction and support as compared to the quality of information they received with mean score of 5.54 (SD 0.79) and 5.19 (SD 0.69), respectively. A lower perception score was observed for efficiency and patient involvement; the mean score was 4.46 (SD 1.01) and 4.34 (SD 0.80), respectively. Cronbach alpha was satisfactory for the total scale (0.81), and the four subscales had values of 0.68 (quality of information), 0.76 (interaction and support), 0.31 (efficiency) and 0.25 (patient involvement), respectively. Mean scores and standard deviations for the perceptions of handover practices items are presented in Table II.

### Relationship between nurses' demographic characteristics and perceptions of handover

The relationship between age of the participants and the overall score was significant, but the strength of the relationship was weak ( $p=0.013$ ,  $r=0.122$ ). Similarly, a weak relationship was observed between nursing experience and the overall score ( $p=0.041$ ,  $r=0.1004$ ). However, there was no significant relationship between years at the healthcare facility and overall score ( $p=0.051$ ), and between duration spent preparing for handover and the overall score ( $p=0.070$ ). Table III shows that the overall score of participants aged 30 years and below and those above 30 years old was significantly different ( $p=0.017$ ). Participants who were more than 30 years old had a statistically significantly higher overall score than those who were 30 years old and below, with the mean score of 5.12 (SD 0.51) and 4.98 (SD 0.57), respectively. The overall score was also significantly different among participants with a diploma and post-basic or degree ( $p=0.012$ ). A one-way ANOVA was conducted to determine if the overall score was different for participants from different departments. There was a statistically significant difference between groups ( $p<0.001$ ). A post-hoc Tukey's test was also conducted and revealed that overall score was statistically significantly higher among participants from the Paediatric as compared to Surgery department with a mean score difference of 0.41 (SD 0.09),  $p<0.001$ ; Obstetrics and Gynaecology as compared to Surgery department with a mean score difference of 0.37 (SD 0.10),  $p=0.003$ ; Paediatric as compared to Medical department with a mean score difference of 0.29 (SD 0.07),  $p=0.001$ ; Paediatric as compared to Orthopaedic department with a mean score difference of 0.26 (SD 0.08),  $p=0.014$ ; and Obstetrics and Gynaecology as compared to Medical department with a mean score difference of 0.25 (SD 0.88),  $p=0.016$ . The differences across groups for the subscales are shown in Table III.

### Nurses' perception of strengths and challenges of current handover practices

From the themes gathered in Table IV, in summary, the nurses highlighted good teamwork and mutual support from nurses who are assuming responsibility for the patients. The transfer of professional care involved the exchange of

Table I: Demographic Characteristics of Nurses (n=414)

Demographic characteristics	Overall frequency distribution		
	Count		Percentage (%)
Age, in years (median, IQR)		27.0 (7.0)	
≤30	307		74.2
>30	107		25.8
Nursing experience, in years (median, IQR)		3.8 (5.5)	
≤5	259		62.6
>5	154		37.2
Missing	1		0.2
Years at the organisation, in years (median, IQR)		3.6 (5.1)	
≤5	266		64.3
>5	133		32.1
Missing	15		3.6
Current department			
Medical	117		28.3
Paediatrics	105		25.4
Orthopaedic	72		17.4
Obstetrics & Gynaecology	72		17.4
Surgery	48		11.6
Highest education level			
Diploma	320		77.3
Post basic/ degree	94		22.7
Duration spent preparing for handover, in minutes (median, IQR)		30.0 (15.0)	
≤30	265		64.0
More than 30	149		36.0

## Notes:

IQR represents interquartile range. Values are presented in median (interquartile range) for continuous variables, and count and percentages, n (%) for categorical variables.

Table II: Handover Evaluation Scale Overall and Subscales Scoring (n=414)

Handover Evaluation Scale	Score	Alpha
Overall perception	5.01 (0.56)	0.81
Subscales		
Quality of information	5.19 (0.69)	0.68
Interaction and support	5.54 (0.79)	0.76
Efficiency	4.46 (1.01)	0.31
Patient involvement	4.34 (0.80)	0.25

## Notes:

Mean scores are presented in mean (standard deviation). Scoring of scale is based on the original seven-point scale: (1) strongly disagree to (7) strongly agree except for four items, which are negatively worded. Reverse score is given for these four items.

High score indicates high quality of handover while low score indicates low quality handover.

Reliability analysis from the original study (O'Connell et. al., 2014) on each subscale produced a Cronbach alpha of 0.80 for quality information, 0.86 for interaction and support, 0.67 for efficiency and 0.69 for patient involvement.

updated information using comprehensible language, and nurses were able to check on the condition of their patients. Some of the respondents also mentioned that involving patients in the handover process can help to validate the handover information. The use of a "nursing handover book" was also stated to have facilitated the handover process; however, the book was not described further.

Among the key limitations raised by the nurses were the distractions from work interruptions. Additionally, concurrent occurrence of doctors' ward rounds while the inter-shift handover was ongoing forced the nurses to compete with the doctors for progress notes of the patients, thus interrupting the handover process. Nurses also stated their concerns on the irrelevant non-clinical discussions. Echoing their earlier opinion in the scale section of the questionnaire, they were also concerned with the handover duration as the time required to conduct the handover was too long if patients were also involved. As a solution, some

participants suggested for an universal handover guideline as reference to improve the handover practice.

## DISCUSSION

This study provides useful foundation based on the self-reported perceptions of nurses on inter-shift handover for sustained process improvement. The findings showed substantial intra-professional interaction and support was involved during this dynamic process of information exchange. The nurses also highlighted the need for sufficient relevant information to be made available, which is to be provided in an uninterrupted practice environment.

In this study, nurses were concerned with the quality of the information, particularly on the amount of information and its importance for patient care, which is similar to findings from other studies.<sup>13,14</sup> The prerequisites of an effective handover in facilitating continuity of care and patient safety

Table III: Relationship between nurses' demographic characteristics and perceptions of handover

Demographic characteristics	Overall				
	Overall perception	Overall of information	Interaction and support	Efficiency	Patient involvement
Overall	5.01 (0.56)	5.19 (0.69)	5.54 (0.79)	4.46 (1.01)	4.34 (0.80)
Age (years)					
≤ 30	4.98 (0.57)*	5.16 (0.70)	5.48 (0.84)*	4.40 (1.00)	4.36 (0.79)
> 30	5.12 (0.51)	5.30 (0.67)	5.73 (0.60)	4.63 (1.01)	4.26 (0.83)
Nursing experience (years)					
≤ 5	4.99 (0.57)	5.16 (0.69)	5.49 (0.82)	4.44 (1.03)	4.35 (0.80)
> 5	5.05 (0.52)	5.23 (0.69)	5.63 (0.73)	4.49 (0.97)	4.31 (0.81)
Years at the organisation (years)					
≤ 5	4.98 (0.57)	5.15 (0.69)	5.51 (0.80)	4.40 (1.03)	4.37 (0.81)
> 5	5.08 (0.55)	5.27 (0.72)	5.61 (0.78)	4.58 (0.96)	4.29 (0.83)
Current department					
Medical	4.90 (0.62)*	5.14 (0.72)*	5.46 (0.89)	4.09 (0.92)*	4.30 (0.92)*
Paediatrics	5.20 (0.45)	5.33 (0.54)	5.58 (0.64)	4.86 (0.96)	4.63 (0.82)
Orthopaedic	4.94 (0.54)	5.04 (0.75)	5.52 (0.83)	4.54 (1.00)	4.15 (0.61)
O&G	5.16 (0.56)	5.43 (0.69)	5.70 (0.74)	4.56 (1.02)	4.30 (0.66)
Surgery	4.79 (0.48)	4.87 (0.65)	5.44 (0.84)	4.21 (0.96)	4.12 (0.74)
Highest education level					
Diploma	4.98 (0.57)*	5.15 (0.70)*	5.50 (0.82)*	4.38 (1.02)*	4.37 (0.81)
Post basic/ degree	5.14 (0.50)	5.34 (0.64)	5.69 (0.67)	4.75 (0.94)	4.21 (0.77)
Duration spent preparing for handover (minutes)					
≤ 30	5.04 (0.53)	5.22 (0.66)	5.56 (0.75)	4.53 (1.01)	4.34 (0.80)
> 30	4.97 (0.60)	5.15 (0.75)	5.51 (0.87)	4.34 (1.00)	4.34 (0.82)

## Notes:

Scores are presented in mean (standard deviation).

O&G = Obstetrics & Gynaecology.

Significant difference across group (p-value<0.05 is marked with an asterisk (\*)).

Independent t-test is used to test differences between two means; one-way ANOVA is used to test for differences between of more than two groups.

Scoring of scale is based on the original seven-point scale: (1) strongly disagree to (7) strongly agree except for four items, which are negatively worded.

Reverse score is given for these four items. Cronbach alpha for the total scale is 0.81.

include an organised and standardised, as well as focused and relevant information pertinent to care setting.<sup>14</sup> Nurses reported a high standard of information quality with the use of structured methods during patient information transfer,<sup>15</sup> while the lack of structure and guidelines were factors affecting information quality.<sup>6,16</sup> This emphasised the need for an institutionalised structured approach, instead of loose guidelines, which was adapted and customised by the departments.

We found that nurses were positive on the interaction and support they received during their handover. This finding is consistent with findings from other studies where nurses were able to ask questions, debrief regarding difficult clinical situations and seek nursing-care education.<sup>15,17,18</sup> Respectful partnership and interactive communication are vital aspects in the continuity of patient care<sup>19</sup> which help to avoid adverse events in patient care such as transferring incomplete information and errors in communication.<sup>20</sup>

The nurses stated that handover was time-consuming and not all information received were relevant to patient care, which has also been reported as a longstanding concern among nurses.<sup>13,21</sup> As aforementioned, it is uncertain which is the most effective handover practice in nursing care.<sup>2</sup> The quality of handover relies on the environments of communication and practice. However, handovers were often conducted in an interruption- and time pressure-driven environment.<sup>14,22,23</sup>

In this study, we found that nurses from the Paediatric department generally had a better perception of the handover practices as compared to nurses from the Surgical and Orthopaedic departments, especially on the overall perception and the quality of information that they received. To the best of our knowledge and literature search, there is little information comparing perception of handover practices of nurses based on clinical practice areas; thus, limiting the comparison of our study findings to that of other studies. Nevertheless, the result is relevant in informing programme planners on clinical practice areas that could potentially require additional attention towards the quality of improvement and in ensuring patient safety.

In this study, despite being able to check on patients, the nurses had mixed reactions towards the involvement of patients during handover, which was echoed in the open-ended section. Concerns were also voiced regarding privacy and confidentiality of patients, as handovers were usually conducted around, over or in front of the patient in the general wards, which is a shared open space. The involvement of patients however, may further enhance this informational and interactional communicative event, which was in line with the advocacy towards achieving person-centred nursing.<sup>24</sup> It is also fundamental towards patient empowerment and could be a partnership model of care between nurses and patients.<sup>25,26</sup> The presence of patients during handover acts as a reminder for the out-going nurses on important details about patient while allowing in-coming

**Table IV: Selected statements on the nurses' perception of strengths and challenges (limitations) of current handover practices.**

Domains, themes and sub-themes	Selected Open-ended Statements
<b>Perceived Strengths</b>	
Conduct & Behaviour	
Having good teamwork	Our ward's teamwork is the best I've experienced.
Staff commitment	I must come early. If I'm just 'on time', everything will be rushed, the work will backfire on me.
Information Relay	
Reference document	We have a pass over book. It's easy, (nurses) can trace the care chronology.
Validating information	Asking patients to help confirm (handover) information.
Proper transfer of information	Pass over allows patient care to be continued properly.
Clarity of information	Colleagues always ready to explain if (nurses) need to clarify things.
Use of clear language	We avoided 'too technical' words so that everyone on the same page.
Working Environment	
Protocol and guideline availability	Our matron created a (work) flow for handover and insisted us to handover in front of the patient.
Involving patients during handover	Our handover is by the bedside to confirm the bed head ticket we are holding is for the correct patient, to understand patients' needs, and to check the patient's condition directly when unclear.
<b>Perceived Limitations</b>	
Conduct & Behaviour	
Not punctual	Some nurses are always late to receive handover.
Gossiping	Nurse [name redacted] always gossiping about patients.
Information Relay	
Insufficient information	Sometimes have unclear information because ward very busy, no time to discuss.
Unclear information	Unable to understand doctor's abbreviations.
Inaccurate information	Some (nurses) tend to tell wrong information, distracted when ward is busy.
Working Environment	
Interruptions	From doctors and house officers: Houseman review patients same time with staff nurse passing over. From superiors: Ward meeting with specialists or matron went over time. From patients and relatives: During pass over, relative asked for change (diapers), complained about IVD (intravenous drip), (nurses) cannot say NO to patient. From new ward admission: New admission in the middle of pass over. From noise: Ward is too noisy (for nurses) to talk and listen. There should be guideline and teachings to make handover more effective.
Absence of universal guideline for handover	
Existing responsibilities	Handover sometimes delayed because (nurses were) stuck accompanying patient to complete MRI (magnetic resonance imaging procedure).
Existing work processes	The number of handovers (to do) is assigned by bed instead of patients currently in the ward.
Time spent for handover	On the perceived workload: Too much paperwork to do compared to actual (work of) carrying out doctor's orders. On the information passed: Pass over take too long, but still not enough time to pass everything. On patient involvement: Involving patients in handover prolongs the process, which itself is already too lengthy.

nurses to clarify information.<sup>18,27</sup> On the other hand patients may be passive during the communication between nurses and patients.<sup>25,26,28</sup>

In this study, the nurses reported experiencing an assortment of interruptions and distractions from patients, relatives and doctors and surrounding factors such as phone calls and busy wards. Such findings were also reported as recurrent barriers.<sup>13-15,29</sup> Interruptions undermine handover effectiveness; it is a distraction to the nurse focus and concentration and led to miscommunication, loss of vital information and adverse patient events.<sup>14,18,30</sup> Interruptions may be reduced with support from all levels of the care team. One study suggested that nurses be empowered in stopping unnecessary interruptions as they occur to protect their dedicated handover times.<sup>30</sup>

Handover involved the content transfer of information and progress, clarification and inquiry of patients as well as reviewing process, which may co-occur or in sequential.<sup>14</sup> In

this study, it was suggested for the ward nurses to receive more support in terms of guidelines and teachings for improvements in their routine activity. This is a valid concern as it relates to the other domains.

The study was designed to gather the perception of the whole practice and process of nurses in the exchange of information and transfer of accountability. The findings enabled us to understand the strengths and limitations, particularly in terms of the conditions that the nurses faced during handover while working in a time-pressured and complex environment. Based on the findings gathered from this study, the survey questionnaire is a potentially useful tool for quality improvements in the facility's handover process.

#### LIMITATIONS

Since we used structured close-ended questionnaires, the perceptions of nurses were not explored in-depth as conducting interviews were not part of the approved study

protocol. Convenience sampling was used instead, rendering the analysis of perception of nurses according to departments and comparison with other hospitals. Male nurses are few in the study site; thus, data on the sex of nurses was not collected (on purpose) to avoid retrospective identification by the site data collectors. Future research can address this matter.

## CONCLUSION

Leveraging on the strength of interaction and support that the nurses received, inter-shift handover among the nurses can be redesigned to be more effective. Quality of information should actually be the focus as it was seen to be the most valuable component in the handover process.

As continuous quality improvement and quality assurance programs are in place to improve patient safety, this study provides a baseline understanding of the nursing handover practices for one of the busiest public hospital in Malaysia, a developing country. Furthermore, the data collection tool in this study can be used as a standardised perception measurement tool across time. The limitations on the domains of quality of information and efficiency may be viewed as opportunities for improvement. In contrast, improvements in the domain of interaction and support can enhance inter-shift handover.

## ACKNOWLEDGEMENT

The authors wish to thank the Director-General of Health Malaysia for his permission to publish this study. We would also like to thank all the participants; the Director of Institute for Health Systems Research for the direction and guidance; the Nursing Division, Ministry of Health Malaysia for the continuous support; the Director of Hospital Kuala Lumpur for permission and cooperation during data collection. This study was a collaborative effort between the Institute for Health Systems Research and the Nursing Division, Ministry of Health Malaysia. No specific research grant was received from any funding agency in the public, commercial or not-for-profit sectors.

## REFERENCES

- Friesen MA, White SV, Byers JF. Handoffs: Implications for nurses. In: Hughes RG, editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville, Maryland: Agency for Healthcare Research and Quality; 2008: 285-332.
- Manser T, Foster S. Effective handover communication: An overview of research and improvement efforts. *Best Pract Res Clin Anaesthesiol* 2011; 25(2): 181-91.
- Haikerwal M, Dobb G, Ahmed T. Safe handover: Safe patients. Guidance on clinical handover for clinicians and managers: Australian Medical Association Limited; 2006 [cited 2016 Oct 27]. Available from: [https://ama.com.au/sites/default/files/documents/Clinical\\_Handover\\_0.pdf](https://ama.com.au/sites/default/files/documents/Clinical_Handover_0.pdf).
- Riesenberg LA, Jessica L, Cunningham JM. Nursing handoffs: A systematic review of the literature. *Am J Nurs* 2010; 110: 2-12.
- Riesenberg LA, Leitzsch J, Little BW. Systematic review of handoff mnemonics literature. *Am J Med Qual* 2009; 24(3): 196-204.
- Hendrich AL, Fay J, Sorrells AK. Effects of acuity-Adaptable rooms on flow of patients and delivery of care. *Am J Crit Care* 2004; 13(1): 35-45.
- Smeulders M, Lucas C, Vermeulen H. Effectiveness of different nursing handover styles for ensuring continuity of information in hospitalised patients. *Cochrane Database Syst Rev* 2014; (6): CD009979.
- O'Connell B, Ockerby C, Hawkins M. Construct validity and reliability of the Handover Evaluation Scale. *J Clin Nurs* 2014; 23(3-4): 560-70.
- Testa D, Emery S. Understanding the perceptions and experiences of Certified Registered Nurse Anaesthetists regarding handovers: A focus group study. *Nurs Open* 2014; 1(1): 32-41.
- Bomba DT, Prakash R. A description of handover processes in an Australian public hospital. *Aust Health Rev* 2005; 29(1): 68-79.
- Malekzadeh J, Mazluom SR, Etezadi T, Tasseri A. A standardised shift handover protocol: Improving nurses' safe practice in intensive care units. *J Caring Sci* 2013; 2(3): 177.
- Ministry of Health Malaysia. Annual Report 2013: Ministry of Health Malaysia; 2013 [cited 2019 Feb 16]. Available from: <http://www.moh.gov.my/images/gallery/publications/Annual%20Report%202013.pdf>.
- Ministry of Health Malaysia. Human Resources for Health, Country Profiles 2015 Malaysia; 2016 [cited 2018 Jun 11]. Available from: <http://www.moh.gov.my/index.php/dl/554756755a584a696158526862693949556b67765457467359586c7a615746665348567459573566556d567a623356795932567a58304e7664573530636e6c6655484a765a6d6c735a584e664d6a41784e5335775a47593d>.
- Brown J, Sims S. Nursing clinical handover in neonatal care. *Contemp Nurse* 2014; 49(1): 50-9.
- Kim E, Kim S, Lee HY. Understanding perceptions of nursing handover among Korean nurses. *Korean Public Health Research* 2014; 40(4): 41-9.
- O'Connell B, Macdonald K, Kelly C. Nursing handover: It's time for a change. *Contemp Nurse* 2008; 30(1): 2-11.
- Welsh CA, Flanagan ME, Ebright P. Barriers and facilitators to nursing handoffs: Recommendations for redesign. *Nurs Outlook*. 2010; 58(3): 148-54.
- Guevara Lozano M, Arroyo Marlés LP. The handover: A central concept in nursing care. *Enfermería Global* 2015; 37: 420-34.
- Yu M, Lee HY, Sherwood G, Kim E. Nurses' handoff and patient safety culture in perinatal care units. *J Clin Nurs* 2018; 27(7-8): e1442-50.
- Birmingham P, Buffum MD, Blegen MA, Lyndon A. Handoffs and patient safety: Grasping the story and painting a full picture. *West J Nurs Res* 2015; 37(11): 1458-78.
- Drach-Zahavy A, Hadid N. Nursing handovers as resilient points of care: linking handover strategies to treatment errors in the patient care in the following shift. *J Adv Nurs* 2015; 71(5): 1135-45.
- Meißner A, Hasselhorn H-M, Estryng-Behar M, Nézet O, Pokorski J, Gould D. Nurses' perception of shift handovers in Europe- Results from the European Nurses' Early Exit Study. *J Adv Nurs* 2007; 57(5): 535-42.
- Roslan SB, Lim ML. Nurses' perceptions of bedside clinical handover in a medical-surgical unit: An interpretive descriptive study. *Proceedings of Singapore Healthcare* 2017; 26(3): 150-7.
- Spooner AJ, Corley A, Chaboyer W, Hammond NE, Fraser JF. Measurement of the frequency and source of interruptions occurring during bedside nursing handover in the intensive care unit: An observational study. *Australian Critical Care* 2015; 28(1): 19-23.
- Eggins S, Slade D. Communication in clinical handover: Improving the safety and quality of the patient experience. *J Public Health Res* 2015; 4(3).
- McCormack B, McCance TV. Development of a framework for person-centred nursing. *J Adv Nurs* 2006; 56(5): 472-9.
- Kitson AL, Muntlin Athlin Å, Elliott J, Cant ML. What's my line? A narrative review and synthesis of the literature on Registered Nurses' communication behaviours between shifts. *J Adv Nurs* 2014; 70(6): 1228-42.
- McMurray A, Chaboyer W, Wallis M, Johnson J, Gehrke T. Patients' perspectives of bedside nursing handover. *Collegian* 2011; 18(1): 19-26.
- Mukhopadhyay A, Leong BS, Lua A, Aroos R, Wong JJ, Koh N, et al. Differences in the handover process and perception between nurses and residents in a critical care setting. *J Clin Nurs* 2015; 24(5-6): 778-85.
- Timonen L, Sihvonen M. Patient participation in bedside reporting on surgical wards. *J Clin Nurs* 2000; 9(4): 542-8.