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REVIEW

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Collaborative practice among general ward staff on escalating care in clinical deterioration: A systematic review

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Abstract

Aim: To understand the issues surrounding collaborative practice and collaboration experiences among general ward staff in the escalation of care for clinically deteriorating patients.

Design: A systematic synthesis without meta-analysis.

Review Methods: Seven electronic databases (CINAHL, Cochrane, Embase, PsycINFO, PubMed, Scopus and ProQuest Theses and Dissertations) were searched from their inception to 30 April 2022. Two reviewers independently screened titles, abstracts and full text for eligibility. The critical appraisal skill programme, Joanna Briggs Institute checklist for analytical cross-sectional studies and mixed methods appraisal tool were used to appraise the quality of the included studies. Both quantitative and qualitative research data were extracted, analysed and then synthesised using the data-based convergent qualitative synthesis approach. This review adhered to the Synthesis without meta-analysis (SWiM) reporting guidelines.

Results: A total of 17 studies were included. Two themes and six sub-themes were generated: (1) intraprofessional factors—inadequate handover, workload and mutual support, raising and acting on concerns, and seeking help from seniors and (2) interprofessional factors—differences in communication styles, and hierarchical approach versus interpersonal relationships.

Conclusions: This systematic review highlights the need to address the intra- and interprofessional issues surrounding collaborative practice in escalation of care among general ward staff.

Implications for the Profession: Findings from this review will inform healthcare leaders and educators on the development of relevant strategies and multi-disciplinary training to foster effective teamwork among nurses and doctors, with the goal of improving the escalation of care for patients with clinical deterioration.

No Patient or Public Contribution: This systematic review did not directly involve patient or public contribution to the manuscript.

KEYWORDS
clinical deterioration, collaboration, escalation of care, nurse, nursing, patient care team, systematic review

1 | INTRODUCTION

There is collective concern over delayed escalation of clinically deteriorating patients in general wards as studies have shown that if responded to promptly, the incidence of unexpected cardiac arrests and unplanned Intensive Care Unit (ICU) admissions (collectively termed serious adverse events) decreases (Jones et al., 2011). This spearheaded the conception of the Rapid Response System (RSS), which facilitates clinicians' identification of, and response to, clinically deteriorating patients outside of the ICU with the goal of preventing serious adverse events (Lyons et al., 2018). Although RRS has been implemented in hospitals internationally in countries such as Australia, New Zealand, the United Kingdom (UK) and the United States, barriers to optimum use of the RSS are still reported.

For RSS to be effective, frontline ward nurses must be able to recognise the signs of patient deterioration and notify the patient's medical team (termed escalation of care). However, factors such as fear of criticism, discrepancies in understanding of what constitutes an emergency, nurses exercising clinical judgement, junior nurses seeking advice from senior nurses prior to escalation and doctors' unacceptance of nursing interventions serve as barriers to prompt escalation of care (Foley & Dowling, 2018; Kitto et al., 2015). Even when communication between nurses and doctors was effective, junior doctors have been noted to 'under-escalate' from fear of angry encounters with senior medical colleagues (Kitto et al., 2015). Hence, communication and collaboration are important between the escalators (nurses) and the responders (medical team) to ensure processes that underpin the RRS function effectively.

Nurses are in key positions to be the first to identify any clinical deterioration (Callaghan et al., 2017; Mushta et al., 2017). In many countries, the nursing workforce is categorised into different levels based on education and level of responsibility. In Australia, New Zealand and Singapore, the workforce is mainly comprised of Registered Nurses (RNs) and Enrolled Nurses (ENs). Whereas, in the UK, the nursing workforce includes RNs, Healthcare Assistants (HCAs) who are unregistered, and Nursing Associates (NAs) who bridge the gap between the RN and HCA. While the RN's main role is to lead patient care, ENs, NAs and HCAs assist with the delivery of care including attending to patients' personal hygiene and elimination needs. One study in Singapore reported that RN-EN collaboration was essential to promote patient safety (Goh et al., 2020). With regard to RRS, a lack of communication between RNs and ENs impeded the ability to for abnormalities to be highlighted to the RN (Chua et al., 2022). Thus, there is a need to strengthen the collaborative practices among ENs and RNs in general wards to facilitate timely escalation of clinically deteriorating ward patients.

What does this paper contribute to the wider global clinical community?

- The review furthers our understanding on the intraprofessional and interprofessional issues affecting collaborative practice in the escalation of care of clinically deteriorating patients among general ward doctors and nurses.
- Continuous effort is recommended to identify relevant management strategies and develop team training to foster collaboration among doctors and nurses in the general wards.

Although several systematic reviews have been published focusing on collaborative practices in escalation of care, the majority have focused on staff in the ICU setting or solely on the activation of the Rapid Response Team (RRT), Medical Emergency Team (MET) or Critical Care Outreach Team (CCOT) (Allen et al., 2017; Ede et al., 2021; Olsen et al., 2019). The most contemporary study in this area included only paediatric settings (Stotts et al., 2020). At present, little attention has been given to understanding the challenges of interprofessional and intraprofessional collaboration during the escalation of patient deterioration among general ward staff, prior to the activation of MET, RRT or CCOT.

2 | AIMS

This systematic review aims to consolidate and synthesise findings from available evidence on the issues surrounding collaborative practice and collaboration experiences among general ward staff in in the escalation of care for clinically deteriorating patients.

3 | METHODS

3.1 | Design

This review was guided by the Synthesis without meta-analysis (SWiM) reporting guidelines (Appendix S1) (Campbell, Layne, et al., 2020; Campbell, McKenzie, et al., 2020).

3.2 | Search methods

An initial search in databases and journals was conducted to identify any similar systematic review. The search strategy comprised of keywords based on four concepts related to interprofessional relations, intraprofessional relations, clinical deterioration and escalation of care. The combination of keywords, synonyms and Medical Subject Headings (MeSH) terms were revised to optimise search results for each database. The detailed search strategy can be found in Appendix S2. Seven electronic databases (CINAHL, Cochrane, Embase, PsycINFO, PubMed and Scopus, and ProQuest Theses and Dissertations) were searched from each database's point of inception until 30 April 2022 to local articles published in English language. A hand search of the reference lists of all included studies was conducted to obtain additional relevant studies. No restrictions were imposed on the year of publication and study design.

3.3 | Inclusion and exclusion criteria

Studies were eligible for inclusion if they (1) were primary studies with a qualitative, quantitative or mixed-methods design and (2) examined issues surrounding collaborative practices or explored collaboration experiences among general ward staff in the escalation of care of clinically deteriorating patients. Studies were excluded if they (1) were conducted in paediatric settings, intensive care units, high dependency units or palliative settings and (2) examined issues surrounding collaborative practices or experiences with escalating patient care to MET, RRT, CCOT or similar response teams who operate outside of the admitting team or covering doctor. Conference abstracts, reviews, opinion papers, correspondence, guidelines, editorial letters, commentaries and case study reports were also excluded.

3.4 | Search selections and outcome

The results from the search were exported into EndNote X9 (The EndNote Team, 2013), where duplicates were removed. Two reviewers independently screened titles, abstracts and full text for eligibility. Disagreements were resolved with discussion in the presence of a third reviewer. A total of 4623 records were retrieved from the search, including five additional records found from a hand-search. After removing 1663 duplicates, the resulting 2960 records were screened for relevance by their title and abstract. Subsequently, 27 full-text articles were assessed fir eligibility. A total of 17 studies were included in this review (Figure 1).

3.5 | Quality appraisal

The quality of the included studies was appraised by two reviewers independently, using the Critical Appraisal Skills Program Qualitative Studies Checklist (Critical Appraisal Skills Programme UK, 2018), the Mixed Methods Appraisal Tool (Hong et al., 2018) and the Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies (Joanna Briggs Institute, 2017). Where differences occurred between the two reviewers, these were resolved through discussions, if not adjudicated by a third senior reviewer. All studies were included regardless of their methodological quality.

3.6 | Data abstraction

One reviewer extracted the study details (authors, year of publication, setting) and descriptive data (study aim, study design and methods, participant characteristics and key findings) in a self-designed data extraction form. Pilot testing of the data extraction form was performed on three studies. All the extracted data were cross-checked by another reviewer for accuracy. Any disagreements were discussed between the two reviewers until a consensus was reached.

3.7 | Synthesis

Given the heterogeneity of the study designs, a narrative synthesis approach was undertaken to summarise and report the finding. Following the data-based convergent qualitative synthesis approach, quantitative data from each study were converted into a textual summary (Pluye & Hong, 2014). The consolidated qualitative data were further analysed using Thomas and Harden's three-step thematic synthesis approach (Thomas & Harden, 2008): inductive coding of text, constructing descriptive themes and generating analytical themes. Two reviewers first independently coded the textual data extracted from the individual studies and organised codes of similar meanings into descriptive themes. Then, the analytical themes were generated by re-reading and comparing the descriptive themes with the original data of the included studies and interpreting the data beyond the content of the original studies to infer more meaningful findings related to the issues surrounding collaborative practice and collaboration experiences among general ward nursing staff. The analytical themes were finalised when a consensus was reached between the two independent reviewers after several discussions with a third independent researcher.

4 | RESULTS

4.1 | Characteristics of included studies

Table 1 summarises the characteristics and key relevant findings of the 17 included studies, which consisted of 14 qualitative studies, two mixed methods studies and one cross-sectional study published between 2013 and 2022. Most studies were conducted in Australia

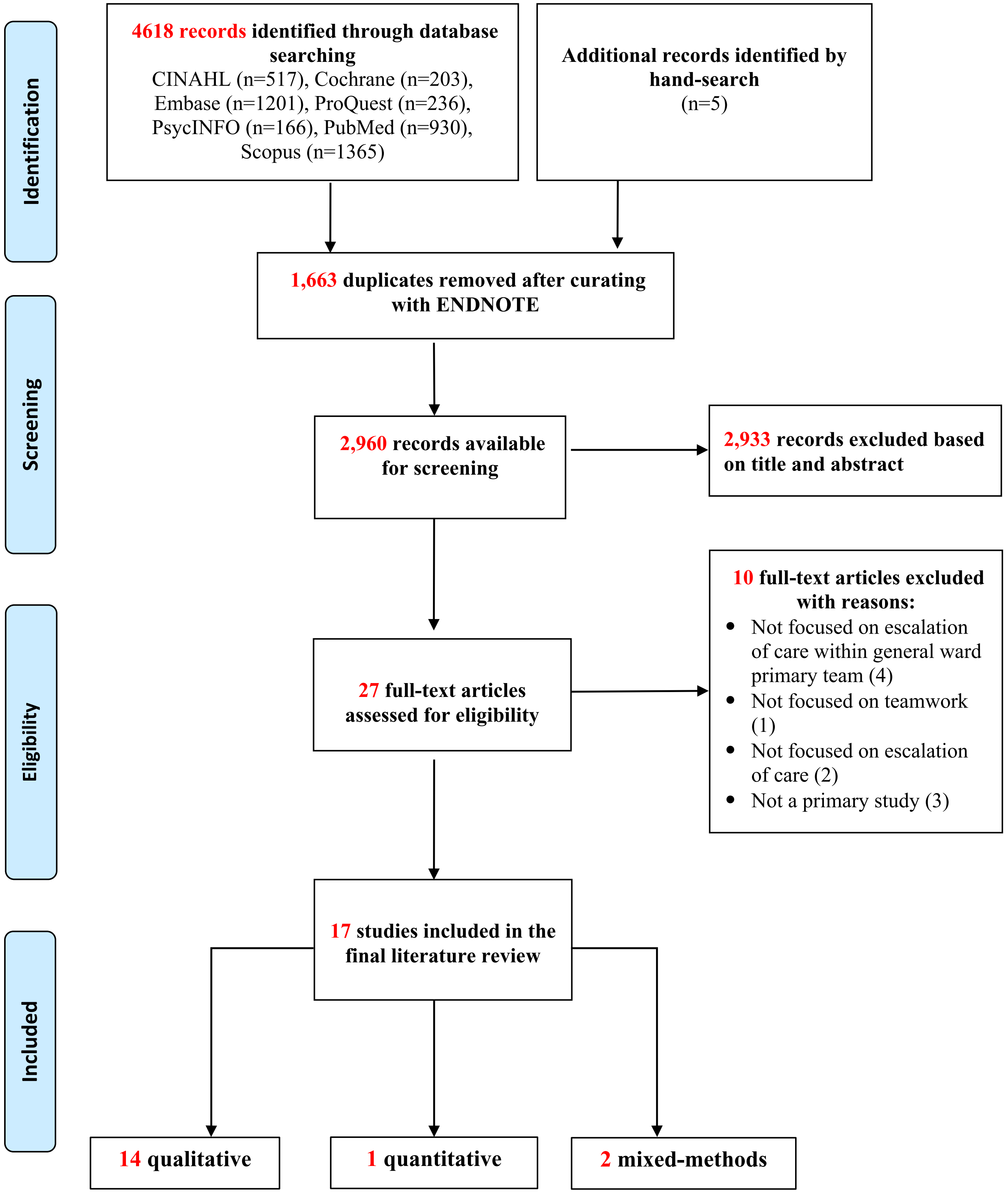

FIGURE 1 PRISMA flow diagram documenting the search process.

($n=6$), followed by the UK ($n=5$) and Singapore ($n=4$). One study each was conducted in Denmark and Ireland. Settings were all in hospital general wards. Qualitative data were collected through interviews ($n=8$), focus group discussions ($n=3$), observations and interviews ($n=2$) and both interviews and focus group discussions ($n=1$). The two mixed methods studies employed observations and questionnaires, and chart reviews and questionnaires. Self-reported questionnaire was used in the only quantitative study. Seven studies involved both nurses and doctors, while nine studies were exclusive to nurses and one study was exclusive to doctors.

TABLE 1 Summary of included studies.

Authors	Study aim(s)	Study design	Sample characteristics	Key relevant findings
Bingham et al. (2020)	To describe nurses' decision-making, experiences and perceptions of escalating care to the primary team using urgent clinical review criteria	Descriptive qualitative study using semi-structured interviews	17 surgical ward nurses, 13 medical ward nurses in an Australian metropolitan teaching hospital	• Nurses sought colleagues or senior's advice • Sometimes, the charge nurse would page a resident on behalf of a RN as they were more likely to get a response because of seniority • Difficulties getting hold of surgical team doctors who were often occupied in operating theatre
Chua et al. (2013)	To explore the ENs' experiences with deteriorating patients	Descriptive qualitative study using semi-structured interviews	15 ENs in a Singapore acute hospital	• At times, ENs were blamed for not reporting deterioration despite having done so and inactions from RNs • ENs felt that RNs should share the task of vital signs monitoring • ENs felt overloaded when faced with many patients who were on hourly vital signs monitoring
Chua et al. (2019)	To explore the experiences of ENs and RNs in recognising clinical deterioration in general wards	Descriptive qualitative study using semi-structured interviews	14 RNs, 8 ENs in a Singapore acute general public hospital	• Ward doctors want vital signs readings • Nurses would consult a more experienced nurse or discuss with their peers • RNs depended heavily on ENs to carry out vital signs assessments though RNs were ultimately responsible for vital signs activities • Overwhelming workload and inadequate staffing levels impaired nurses' capabilities to detect clinical deterioration • ENs highlighted the need for a greater involvement of RNs in performing vital signs assessments and checking patients' observation charts
Chua et al. (2020)	To explore the experiences of junior doctors and nurses in escalating care for deteriorating patients in general wards	Descriptive qualitative study using semi-structured interviews	10 junior doctors, 14 RNs in a Singapore acute general hospital	• Most doctors reported that nurses were unable to clearly articulate the patient problem • Junior doctors reported fear of being criticised, but were found to be less fearful if they had better relationships with consultants • Escalation of care follows the traditional approach of nurses first calling the most junior doctors to review a deteriorating patient
Chua et al. (2022)	To explore the collaboration experiences between ENs and RNs in recognising and responding to clinical deterioration in general wards	Descriptive qualitative study using semi-structured interviews	11 RNs, 12 ENs in a Singapore tertiary hospital	• ENs were rarely involved in the change-of-shift report • RNs depended heavily on ENs to carry out vital signs monitoring but ENs reported feeling overwhelmed juggling multiple tasks • When faced with a heavier workload or patient crisis, nurses desired for support readily from their colleagues • ENs yearned for more autonomy in escalation-related decisions
Ede et al. (2019)	To map the barriers and facilitators to the escalation of care in acute ward setting	Qualitative observation study using field notes with an observation guide and ad hoc semi-structured interviews	55 hours of qualitative observation in 12 different medical and surgical wards of a major teaching hospital trust in England	• Beliefs of insufficient staff levels and inadequate staff skill mix were identified as the main cause for hindering care • There were situations where nurses were out of the ward, but they did not handover their patients to anyone
Flenady et al. (2020)	To explore sociocultural factors affecting clinicians' compliance with an EWS system	Interpretative qualitative study using semi-structured interviews	10 medical officers, 20 nurses in Queensland's public hospitals	• Some senior consultants are not readily available to advise junior medical officers regarding modifications to the early warning score thresholds • Nurses highlighted that professional hierarchies hinder communication and timely responses • In a well-managed escalation of patient care, junior nurse clinicians are well-supported

Continues

TABLE 1 Continued

Authors	Study aim(s)	Study design	Sample characteristics	Key relevant findings
Foley and Dowling (2018)	To describe how nurses use the EWS in acute settings, their compliance with the EWS and explore their perceptions and experiences of the EWS	Single descriptive case study using observations and semi-structured interviews	10 nurses, 2 HCAs in a large Irish regional hospital	• Patients were regularly reviewed by junior medical staff when a senior medical review was needed • Clinical responses were often slow due to heavy workload • Nurses were aware of the ISBAR (identity, situation, background, assessment and recommendation) framework but did not use it normally
Iddrisu et al. (2018)	To explore nurse' role in recognising and responding to deteriorating patients post-surgery	Descriptive qualitative study using focus groups	14 registered nurses in a metropolitan teaching hospital in Melbourne	• Some nurses felt that their patients' issues were complicated and would rather senior staff review over junior medical staff • The use of objective data improves communication with the medical team
Johnston et al. (2014)	To explore the problems surrounding escalation of care in surgery and strategies for improving this safety-critical process	Grounded theory using semi-structured interviews	16 attending/senior resident grade surgeons, 11 surgical PGY1s, six surgical nurses, four intensivists, four critical care outreach team members from three hospitals in London	• Some juniors and nurses did not escalate care due to their believed potential lack of clinical knowledge of their senior colleagues • Fear of criticism from a senior colleague when escalating care was of concern for all groups • Rapport with their senior colleague was the most important team factor affecting escalation of care
Johnston et al. (2015)	To systematically risk assess and analyse the escalation of care process in the surgical ward.	Mixed-methods using ethnographic observation and risk-assessment study	42 hours of observation in six general surgery or surgical high dependency unit wards For risk assessment survey: Hospital 1: Two attending surgeons, seven surgical residents, two surgical interns, three nurses, and two nursing assistants from postoperative surgery wards Hospital 3: Two attending surgeons, four surgical residents, three surgical interns, and five nurses from postoperative surgery wards	• Nursing participants felt that clinical understaffing was the principal cause of failure to escalate care • Failure to communicate between nurses and junior doctors are affected by fear of criticism by junior doctors • For junior doctors, failure to escalate is affected by the hierarchy, seniors being unavailable due to other work matters, and being short-staffed
Martland et al. (2015)	To develop a grounded theory related to the communication process between clinicians prior to the activation of an RRT when general concern criterion was used.	Grounded theory study using focus group discussions	15 doctors, 28 nurses in an Australian tertiary referral centre	• In the absence of a concise handover, there was an immediate rise in anxiety for nursing staff especially if the patient was unstable • Doctors would use a structured approach while nurses seemed to communicate in a disorganised manner • Senior staff looked to communicate with other senior staff because there was a shared knowledge of priorities and greater regard
Petersen et al. (2017)	To identify barriers and facilitators for nurses in the use of the EWS escalation protocol	Descriptive qualitative study using focus group discussions	18 nurses (7 surgical, 11 medical) from Bispebjerg-Frederiksberg University Hospital in Copenhagen	• Under-staffing and time constraints were reported as the main barriers for non-adherence to monitoring, with nurses accepting these constraints as a fundamental and unalterable condition of work life • Nurses covered for each other, so nurses with the sickest patients would not be distracted by routine tasks • Nurses were more likely to contact doctors they had good rapport with and deemed to be skilled • Nurses were reluctant to call junior doctors and rarely regarded their contributions as valuable

TABLE 1 Continued

Authors	Study aim(s)	Study design	Sample characteristics	Key relevant findings
Rotella et al. (2014)	To investigate the perceived factors that affect escalation of care by junior medical officers	Cross-sectional study using a survey	50 junior medical officers from a tertiary level, university-affiliated hospital in Australia	• 52% of junior medical officers disagreed or strongly disagreed that they were hesitant to escalate care as they did not want to wake a senior, while 36% agreed or strongly agreed • 12% of junior medical officers were reluctant to escalate care for fear of criticism, while 16% were uncertain
Smith and Aitken (2015)	To investigate nurses' use of a single parameter track and trigger chart to inform implementation of the NEWS tool and to explore the barriers and facilitators deemed by nurses to patient monitoring	Mixed method service using track and trigger chart reviews and open-ended questionnaires	11 RNs, 7 pre-registration student nurses, 13 HCAs from a tertiary referral University Hospital in London	• Workload as a key challenge to effective monitoring of patients and the process of escalation • Some RNs were comfortable delegating vital signs monitoring to HCAs but recognised it was still their responsibility • Both RNs and HCAs reported the unavailability of a senior RN or nurse in-charge as a difficulty to escalation of care • Most participants highlighted communication and interaction within the nursing team as an obstacle or enabler to good escalation of care
Smith et al. (2021)	To explore barriers and enablers of recognition and response to signs of patient deterioration by nursing staff in an acute hospital	A qualitative theory-driven interview study underpinned by the Theoretical Domains Framework of behaviour change	16 RNs and 16 HCAs from a UK metropolitan teaching hospital	• A lack of staffing as a barrier to reviewing NEWS charts or taking timely measurements of vital signs • RNs and HCAs frequently reported the action of measuring vital signs as being part of the HCAs role despite RNs taking responsibility for it • A number of RNs and HCAs believed that their colleague was supportive of them escalating deterioration and was particularly influential when the colleague was more senior
Walker et al. (2020)	To identify barriers and facilitators that affect clinicians' absent or delayed response to clinical deterioration with the use of Theoretical Domains Framework.	Descriptive qualitative design using semi-structured interviews and focus group discussions	Two ENs, 14 RNs, three clinical nurses, one nurse educator, three clinical nurse consultants, two division nurse managers, two medical residents, two registrars, four allied health professionals from two Australian tertiary hospitals	• Assumed knowledge occurred during handover between nurses at shift hand-over • Senior medical staff were often unavailable for prolonged periods of time (e.g. due to surgery) • Junior nurses and medical officers were afraid of criticism from senior clinicians • Familiarity was an important component in developing good team relationships

Abbreviations: EN, enrolled nurse; EWS, early warning score; HCA, healthcare assistant; NEWS, national early warning score; RN, registered nurse.

4.2 | Quality assessment results

The methodological quality of the included studies ranged from 50% to 100%, with a median score of 75%. All the authors reached a consensus on the outcomes of the quality assessment. No study was excluded from the review based on its methodological quality as the purpose of this review was to collate all available evidence on this topic. The quality appraisal reported by item of each study is presented in Appendix S3.

The main weaknesses of the qualitative studies were failure to consider the effect of the researcher-participant relationship ($n=9$) and unclear or lack of information to determine whether the data analysis was sufficiently rigorous ($n=8$). The weaknesses of the quantitative study were lack of considerations for confounders and insufficient information on the validity and reliability of the measurement used. Both the mixed methods studies had moderately high quality.

4.3 | Review findings

Two themes and six sub-themes emerged from this review: (1) intraprofessional factors – inadequate handover, workload and mutual support, raising and acting on concerns, and seeking help from seniors and (2) interprofessional factors—differences in communication styles, and hierarchical approach versus interpersonal relationships.

4.3.1 | Intraprofessional factors

Inadequate handover

Inadequate handover of patient information among the nursing team was identified in five studies to have contributed to pertinent patient information being forgotten or missed, which carried significant risks for delayed recognition and escalation of patient deterioration (Chua et al., 2022; Ede et al., 2019; Martland et al., 2015; Smith et al., 2021; Walker et al., 2020). In one study, Chua et al. (2022) reported that ENs' ability to identify patients at risk of clinical deterioration was greatly hindered because they often did not participate in the RN-to-RN shift handover reports and there was a gap in the sharing of patient information from RNs to ENs. In another study, incomplete transmission of vital patient information also occurred when the incoming nurses were assumed to have an adequate knowledge of the patient's condition if they had cared for the patient previously (Walker et al., 2020). All these resulted in nurses commencing shifts without fundamental knowledge about their patient's conditions, which resulted in nurses not being well positioned to closely observe patients at higher risk of clinical deterioration, a significant contributor to failures in escalation of care (Chua et al., 2022; Martland et al., 2015; Smith et al., 2021). Further, Martland et al. (2015) found an increase in nurses' levels of anxiety and stress was associated with poor handover with regard to the patient's care plan, resuscitation status and acceptable ranges for vital signs which led to some 'unnecessary' RRT calls being triggered.

While most inadequate handover were documented during inter-shift handovers, Ede et al. (2019) reported that missed handovers also occurred during a nursing shift. In the study, nurses were observed not to handover their patients to another covering colleague when they had to leave the ward for patient procedures or professional development (Ede et al., 2019).

Workload and mutual support

Nine studies discussed how workload, staffing levels and mutual support influence collaborative practice among ward nurses, which in turn affected the recognition and escalation of care of deteriorating patients (Chua et al., 2013, 2019, 2022; Ede et al., 2019; Johnston et al., 2015; Petersen et al., 2017; Smith & Aitken, 2015; Smith et al., 2021; Walker et al., 2020). A handful of studies ($n=8$) identified inadequate staffing levels in relation to high workload as a primary cause for poor adherence to patient monitoring protocol and a key barrier to immediate escalation of clinical deterioration (Chua et al., 2013, 2019, 2022; Ede et al., 2019; Johnston et al., 2015; Petersen et al., 2017; Smith & Aitken, 2015; Smith et al., 2021). In Petersen et al. (2017), nurses accepted this staffing constraint as an unalterable condition of their work life and emphasised the importance of nurses covering for each other so that nurses with sicker patients would not be preoccupied with routine tasks which could prevent early escalation of care. Walker et al. (2020) further highlighted the critical role that unit nursing leaders play in creating a culture of nursing teamwork to ensure safe, quality patient care.

Five studies investigated ward nurses' patient monitoring practices (Chua et al., 2013, 2019, 2022; Smith & Aitken, 2015; Smith et al., 2021). The data from these studies demonstrated that RNs appeared to be comfortable with delegating vital signs monitoring to the lower skilled nursing staff such as ENs and HCAs and often relied heavily on these colleagues to perform vital signs assessments (Chua et al., 2013, 2019, 2022; Smith & Aitken, 2015; Smith et al., 2021), despite RNs recognising that they were ultimately responsible for vital signs monitoring (Chua et al., 2019, 2022; Smith & Aitken, 2015; Smith et al., 2021). In this regard, both the ENs and HCAs highlighted the importance of mutual support among the nursing team (Chua et al., 2019, 2022; Smith et al., 2021). Analogous to RNs expected ENs to offer assistance when workload was high (Chua et al., 2022), ENs also reported the desire for RNs to be more proactive in assisting with vital signs monitoring particularly when faced with an overwhelming number of nursing tasks (Chua et al., 2013, 2019, 2022). In the study by Chua et al. (2022), RNs appeared to be more passive in reciprocating this type of mutual support.

Raising and acting on concerns

Five studies reported on the beliefs of ENs and HCAs about escalating signs of clinical deterioration to RNs (Chua et al., 2013, 2022; Smith & Aitken, 2015; Smith et al., 2021; Walker et al., 2020). While ENs and HCAs were well-aware of the importance of reporting any signs of clinical deterioration or vital signs abnormalities to the

RNs, they expected RNs to acknowledge and act on their concerns. However, qualitative data from four studies showed that their concerns were at times disregarded by the RNs, which impeded early escalation of care (Chua et al., 2013, 2022; Smith & Aitken, 2015; Smith et al., 2021). The inactions from the RNs resulted in ENs feeling undervalued for their professional role in the nursing team and having their clinical judgement undermined by the RNs, which could lead to friction in EN-RN relationships (Chua et al., 2022). Findings from both Chua et al. (2013) and Chua et al. (2022) also identified ENs' feelings of unjust when they were eventually blamed by the RNs for not reporting the patient's deteriorating condition earlier despite having done so.

Three studies further identified a stepwise hierarchical approach to escalation of care within the nursing profession, that is HCAs to RNs or ENs to RNs (Chua et al., 2022; Smith & Aitken, 2015; Walker et al., 2020), to which Smith and Aitken (2015) warned the possibility of communication breakdown intraprofessionally within the nursing team even before communication is extended to the doctors. Interestingly, ENs in the study by Chua et al. (2022) reported a desire to be more involved in nursing team discussions regarding escalation-related decisions which was associated with ENs having a sense of belonging and feeling valued as coworkers rather than subordinates to RNs.

Seeking help from seniors

This theme, informed by 12 studies, scrutinised ward staff's attitudes and behaviours towards seeking help from their seniors when faced with clinically deteriorating patients (Bingham et al., 2020; Chua et al., 2019, 2020; Flenady et al., 2020; Foley & Dowling, 2018; Johnston et al., 2014, 2015; Martland et al., 2015; Rotella et al., 2014; Smith & Aitken, 2015; Smith et al., 2021; Walker et al., 2020). Ward nurses had no qualms about seeking help from their seniors and often consulted the more experienced nurses to seek confirmation on their clinical assessment, as well as advice on care escalation and management of patient deterioration (Bingham et al., 2020; Chua et al., 2019; Smith & Aitken, 2015; Smith et al., 2021). In some instances, nurses sought the help of their seniors to contact doctors who were reported to give more credence to the words of more experienced nurses or charge nurses (Bingham et al., 2020; Martland et al., 2015; Walker et al., 2020). However, senior RNs or charge nurses might not be readily available, and Smith et al. (2021) indicated this as a potential barrier to immediate escalation of a deteriorating patient.

Several studies suggest that the junior doctors desire to seek advice from their seniors were at times consumed by their fear of being criticised by their seniors, which hampered the escalation of care process. (Bingham et al., 2020; Chua et al., 2020; Johnston et al., 2014; Martland et al., 2015; Rotella et al., 2014; Walker et al., 2020). Rotella et al. (2014) surveyed 50 junior medical officers and found that close to 15% of the participants were reluctant to escalate care and a further 15% were ambivalent about it. Reported barriers from medical officers were fear of being berated if their patients were not deemed unwell or fear of criticism for the assessment they had performed or their management of the patient. A striking finding was that close to 40% were reluctant to wake their seniors up when on-call (Rotella et al., 2014). Similarly, a qualitative study by Chua et al. (2020) found that junior doctors were more hesitant to escalate patient care when working with stricter seniors and would exhaust all management within their capacity before escalating to their seniors. This resulted in instances where junior doctors or on-calls were reluctant to make changes to the patient's plan that was agreed upon by the seniors of the admitting team despite changes in the patient's conditions (Bingham et al., 2020; Martland et al., 2015).

Another issue that surfaced in four studies was the difficulties that junior doctors faced in contacting their seniors (Flenady et al., 2020; Foley & Dowling, 2018; Johnston et al., 2015; Walker et al., 2020). A common identified challenge was not being able to contact senior doctors when they needed advice regarding modifications to a patient's vital signs cut-off values marking the threshold for activating the MET (Flenady et al., 2020; Foley & Dowling, 2018; Walker et al., 2020), and this problem was notably more apparent in the surgical discipline where the senior staff were reportedly unavailable for long period of times due to surgery (Bingham et al., 2020; Johnston et al., 2015; Walker et al., 2020).

4.3.2 | Interprofessional factors

Differences in communication styles

Eight studies described the communication between nurses and doctors in the escalation of clinical deterioration (Bingham et al., 2020; Chua et al., 2019, 2020; Flenady et al., 2020; Foley & Dowling, 2018; Iddrisu et al., 2018; Martland et al., 2015; Walker et al., 2020). From the included studies, two distinct styles of communication were established: a loosely structured communication of patient deterioration that focused on subjective phenomena in nursing (Chua et al., 2020; Foley & Dowling, 2018; Martland et al., 2015) and a less ambiguous, concise and structured communication in medicine based on objective data, in particular vital signs, that was considered the most important quantifiable evidence to demonstrate clinical deterioration (Chua et al., 2019, 2020; Iddrisu et al., 2018; Martland et al., 2015; Walker et al., 2020). While nurses in Bingham et al. (2020) were comfortable in collating information and communicating patient deterioration to the medical team, Chua et al. (2020) and Foley and Dowling (2018) identified that nurses' communication of clinical deterioration to the medical team was lacking. In these two studies, nurses were aware of the ISBAR (Identity, Situation, Background, Assessment and Recommendation) framework to structure their communication of clinical deterioration. However, in Foley and Dowling (2018), nurses rarely used the ISBAR as a communication framework, resulting in them often being prompted for more information by the doctor. By comparison, data from Chua et al. (2020) suggested an unconscious incompetence among some nurses in their communication skills, suggesting the need to improve nurses' use of the ISBAR. While nurses of varied years of nursing experience in Chua et al. (2020) did not perceive any issue in their communication of clinical deterioration, the junior doctors in the study highlighted the need for nurses, especially those with less experience, to be concise and articulate in their description of a patient's situation and reporting of assessment findings. Likewise, nurses' communication of clinical deterioration was described by the doctors in Martland et al. (2015) as being disorganised which hindered prioritisation of patient problems warranting urgent attention.

Effective communication of clinical deterioration extended beyond nurses knowing when and who to escalate to and how to convey important information effectively, but also include eliciting a response from the medical team. Four studies reported poor verbal and written communication from the medical team which could result in discontinuity of care or delays in treatment (Bingham et al., 2020; Flenady et al., 2020; Martland et al., 2015; Walker et al., 2020). Examples of poor doctor–nurse communication included doctors not documenting their treatment plan after reviewing the deteriorating patient (Bingham et al., 2020), doctors communicating management plan to the charge nurse instead of the nurse assigned to care for the patient (Walker et al., 2020), and ambiguity in the written or verbal communication regarding patient's treatment plans (Flenady et al., 2020; Martland et al., 2015).

Hierarchical approach versus interpersonal relationships

This theme, informed by seven studies, discussed how interprofessional hierarchies and interpersonal relationships influence escalation of care (Chua et al., 2020; Flenady et al., 2020; Iddrisu et al., 2018; Johnston et al., 2014, 2015; Petersen et al., 2017; Walker et al., 2020). Five studies identified a perceived hierarchy between the nursing and medicine professions in the escalation of care, which led to nurses escalating patient deterioration only to the junior doctors regardless of the severity of the patient situation (Chua et al., 2020; Flenady et al., 2020; Johnston et al., 2014, 2015; Walker et al., 2020). While the fear of being reprimanded by the junior doctors for bypassing them as well as fear of being criticised by senior doctors were the cited barriers to nurses' direct escalation to a senior doctor (Johnston et al., 2014, 2015), beneath nurses' fear laid the unspoken professional hierarchy between the nursing and medicine professions (Chua et al., 2020). This traditional approach of calling the junior doctors first under any circumstance could have dire consequences on patient safety especially in a culture where the junior doctors would attempt to stabilise and handle the deteriorating patients first before escalating to their seniors or activating the MET (Chua et al., 2020).

Notwithstanding the evidence on interprofessional hierarchies, interpersonal relations between ward nurses and doctors were reported as a key factor to escalation of care. A few studies have demonstrated that a collegial relationship between ward nurses and doctors would not only encourage early escalation of care, but also escalation to the appropriately skilled doctors (Johnston et al., 2014; Petersen et al., 2017; Walker et al., 2020). Both Johnston et al. (2014) and Petersen et al. (2017) highlighted the importance of rapport and approachability of senior doctors as enablers of nurses escalating to senior doctors. It is worth noting that ward nurses also considered the severity of patient situation and whether a review from a senior doctor was needed in their escalation decisions (Iddrisu et al., 2018; Petersen et al., 2017). In these two studies, nurses were more inclined to escalate to a more senior doctor if the patient's issues were complex and deemed to be beyond a junior doctor's capacity to manage (Iddrisu et al., 2018; Petersen et al., 2017).

5 | DISCUSSION

This systematic review synthesised issues surrounding intraprofessional and interprofessional collaborative practice among nurses and doctors in escalation of care. While the intraprofessional collaborative practice involved ENs and RNs (EN-RN), RNs and RNs (RN-RN), and junior doctors and senior doctors (Dr-Dr), the interprofessinal collaborative practice involved RN and doctor (RN-Dr).

5.1 | EN/HCA-RN collaboration

Typically, a nursing team comprising RNs and ENs (or licensed practical nurse work or NA), with the support of HCAs, together to provide care for a group of patients. A suboptimal EN/HCA-RN intraprofessional collaborative practice was observed in the reviewed papers that can potentially lead to delays in recognition and escalation of clinical deterioration. Sala's elements of teamwork which includes team orientation, mutual performance monitoring and backup can be applied to understand the EN/HCA-RN collaborative practice and to identify strategies to foster their teamwork. Team orientation describes commitment to team goals versus personal objectives (Kaiser & Westers, 2018). As identified from the reviewed studies, the non-involvement of ENs and HCAs in the handover process and the lack of sharing of information between RNs and ENs/HCAs may serve as hindrances to the development of the team orientation. Previous studies have identified the lack of team orientation in nursing team and called for strategies to foster collective orientation (Goh et al., 2020; Kaiser & Westers, 2018). Besides participating in shift handover, team huddle between ENs/HCAs and RNs at the beginning of each shift could facilitate the development of team orientation through shared understanding of the patient information and priorities of care, and the setting of performance expectations (Chua et al., 2020; Smith et al., 2022).

In this review, the mutual performance monitoring and backup, which are important team behaviours for escalation of care, did not seem to be evident in the collaborative practice between ENs and RNs. The behaviours of supporting ENs with their task appeared to be lacking from the RNs, resulting in ENs being overloaded with nursing tasks including vital signs monitoring. Due to the overwhelming workload, ENs often performed incomplete vital sign measurements and even overlooked the reporting of patients who might have abnormal vital signs readings (Chua et al., 2019). While a lack of supervision and backup behaviours were identified from RNs, ENs on their part were not vocal in communicating their needs and seeking help from RNs. As highlighted by Kaiser and Westers (2018), a predominant mindset of clear work assignments and role delineation among the nursing team might have discouraged mutual support and backup behaviours. Thus, efforts are needed for both ENs and RNs to be mindful of each other's workload and to provide mutual support where possible. Given that good communication, supervision, and teamwork are the fundamentals of effective delegation (Wagner, 2018), there is a need to develop RNs' delegation skills, with a greater focus on performance monitoring and backup behaviours (Chua et al., 2022; Goh et al., 2020).

This review also identified two issues that could jeopardise patient safety. First, RNs' reliance on the ENs and HCAs to undertake vital signs assessments and report vital signs abnormalities without adequate supervision are apparent in the studies of the review. Clinical reasoning skills are required to relate the vital signs readings to the patient's clinical presentation and to interpret information in the context of pathophysiology and potential physiological compensation that could mask subtle signs (Chua et al., 2013; Mok et al., 2015). HCA training to support RNs in the provision of patient care activities is typically employer-driven and may be minimal or inconsistent which could explain the results of earlier studies where concerns regarding the ability of HCAs to identify acutely unwell patients have been raised (James et al., 2010; Wheatley, 2006). Likewise, knowledge deficits in pathophysiology and physiological compensation among ENs have also been demonstrated previously (Chua et al., 2013, 2019). While HCAs and ENs could be assigned to measure and record vital signs readings if they have received adequate training, RNs remain accountable and responsible for vital signs assessment and interpretation. Second, this review points towards an asymmetrical EN/HCA–RN power relations regarding escalation of care decision-makings and some evidence of EN/HCAs' concerns being undermined which can potentially compromise patient safety. With the use of teams of RNs and ENs/HCAs as the nursing care model in most acute care systems, there is need to strengthen the professional relationships between RNs and ENs/HCAs through interventions that promote teamwork, communication and recognising the unique, valuable and expert contribution of each professional (Campbell, Layne, et al., 2020; Campbell, McKenzie, et al., 2020).

5.2 | RN-RN collaboration

The review identified collaborative practice on RN-to-RN change-of-shift handovers as a crucial process for nurses to communicate information regarding patient condition. The notion of "knowing" the patient in facilitating nurses' recognition of subtle changes in patients' conditions has been well documented in nursing literature related to clinical deterioration (Chua et al., 2019; Massey et al., 2017). A study by Lavoie et al. (2020) revealed that the sharing of information during change-of-shift has an impact on nurses' initial judgement of a patient's risk of deterioration. This initial judgement could potentially play a critical role in their escalation of care. In addition, it was found that the sharing of information at handover appeared to be based on nurses' sharing of subjective cues of patient deterioration rather than solely the objective cues captured by early warning score in the electronic health record (Lavoie et al., 2020). This highlighted the importance of effective communication during verbal exchange to ensure the quality of handover (Ernst et al., 2018). Standardised handover tools have been utilised to provide a shared mental model for structuring handover communication. Several studies on the application of these tools in nursing handover suggest they improve patient outcomes by reducing falls, pressure injuries, and medication errors (Bukoh & Siah, 2020). However, there are limited studies examining the impact of these tools on nurses' role in escalation of care.

In contrast to the lack of mutual support between RNs and ENs/HCAs, the RNs in the reviewed studies reported seeking help from their senior RNs in escalating care of deteriorating patient. Although the practice of seeking affirmation from the more experienced nurses may suggest a lack of confidence among nurses in their patient assessments and clinical judgements, having a supportive team where nurses have no fear of seeking each other for help or advice is important to ensure prompt and appropriate escalation of care (Chua et al., 2019; Smith et al., 2021). While the skill mix of nurses providing care has been known to impact patient outcomes (Aiken et al., 2017), findings of this review highlight the importance of having adequate numbers of experienced RNs on every shift to support decision-making on the escalation of care for clinically deteriorating patients (Aiken et al., 2011; Smith et al., 2020; Zaranko et al., 2022).

5.3 | Doctor–nurse collaboration

With regard to interprofessional collaboration, the review identified differences in communication styles between doctors and nurses when reporting on a deteriorating patient. Several studies have shown the effectiveness of the ISBAR communication tool as a shared mental model to structure interprofessional communication about a patient's condition (Buckley et al., 2016; Liaw et al., 2014). Although the application of communication tool and the early warning scoring triggering criteria system have enabled nurses to provide quantifiable evidence of patient deterioration to the doctors (Liaw et al., 2016), the reliance on objective evidence may devalue nurses' subjective judgement on early signs of deterioration (Mackintosh et al., 2012). Thus, while nurses need to verbalise both objective and subjective evidence of deterioration using a structured communication tool, doctors need to recognise the value of nurses' worry in detecting early clinical deterioration (Douw et al., 2015).

From the reviewed studies, the asymmetrical power nurse–doctor relationship was found to create fear, and consequently affect their willingness to escalate care. Conversely, through interpersonal relationship, nurses were found to be more willing to escalate care to the doctors. This could be due to the fostering of mutual trust from the development of interpersonal relationship. A culture of mutual trust is important as it promotes a sense of willingness to share information among team members (Salas et al., 2005). While opportunity for social interaction could be encouraged to build interpersonal relationship, formal strategies including interprofessional education and team training could integrate the concepts of open communication, shared information and decision-making to foster doctor–nurse collaboration (Tang et al., 2017).

5.4 | Doctor–Doctor collaboration

In the reviewed studies, junior doctors reported a lack of access to senior medical staff for advice about deteriorating patient. Similar to junior nurses, junior doctors would usually consult their seniors first for fear of making an unnecessary MET call (Chua et al., 2020; Elmufdi et al., 2018). While the lack of professional confidences to make decision on escalation of care in the absence of senior decision-makers was evident among the junior doctors (Walker et al., 2020), there was also unreasonable expectation that they should be competent in handling the situations (Sheehan et al., 2012). Thus, in addition to developing their competencies in clinical knowledge and organisational policy related to patient deterioration, medical leadership can create a supportive environment for junior doctors through nurturing effective communication, relationship building skills, positive feedback and learning from mistakes (Ortiz, 2016; Walker et al., 2020).

5.5 | Strengths and limitations

The inclusion of qualitative, quantitative and mixed-method studies in this review provided a broad overview and in-depth insight into the collaborative practices and collaboration experiences among general ward staff in the escalation of care of clinically deteriorating patients. While a comprehensive search strategy was devised to locate articles, the sole inclusion of English papers could have resulted in publication bias and omission of relevant information, focusing on studies primarily from English speaking countries. Furthermore, the included studies were all conducted in acute or tertiary hospital settings, limiting the generalisability of the current review's findings to institutionalised step down care settings such as community hospitals.

6 | CONCLUSION

This systematic review deepens our understanding on the intraprofessional and interprofessional issues affecting collaborative practice in the escalation of care of clinically deteriorating patients among general ward doctors and nurses. The findings serve as a call for healthcare leaders and educators to develop strategies and team interventions to foster effective collaborative practices among doctors and nurses working in the general wards.

7 | RELEVANCE TO CLINICAL PRACTICE

There are several implications from this study that can be implemented to enhance collaborative practice in escalation of care among doctors and nurses. The Salas's 'Big Five' framework of teamwork which comprises five core elements of teamwork (team orientation, team leadership, mutual performance monitoring, backup and adaptability) and three coordination mechanisms (communication, shared mental models and mutual trust) could be adopted by the healthcare leaders and educators in the management strategies and team training to foster team behaviours (Salas et al., 2005). First, communication processes such as shift handover and interim shift team huddles should be conducted among all levels of nurses to facilitate the development of team orientation through shared understanding of the patient care and clear performance expectations. Second, the development of leadership and delegation skills is critical for RNs, who serves as the team leader, to lead the nursing team (such as ENs and HCAs) in the delivery of high quality patient care. Third, team training for intraprofessional (EN/HCA-RN) and interprofessional (Dr-RN) education focusing on communication strategies to develop shared mental models could be implemented by educators in educational institutions and workplace setting. Finally, a culture of mutual trust could be built by the healthcare leaders through open communication, shared decision-making and relationship building.

AUTHOR CONTRIBUTIONS

Conceptualization, methodology, investigation, formal analysis and writing—original draft: JQYH; conceptualization, methodology, formal analysis, supervision and writing—original draft: WLC and SYL; investigation: CMH; interpretation of data and writing—original draft: QLPG; interpretation of data and critical revision of manuscript: DS. All the listed authors have given final approval of the version to be published.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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