Collaboration between hospital physicians and nurses: An integrated literature review

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Background: Ineffective physician–nurse collaboration has been shown to cause work dissatisfaction among physicians and nurses and compromised the quality of patient care.

Aim: The review sought to explore: (1) attitudes of physicians and nurses toward physician–nurse collaboration; (2) factors affecting physician–nurse collaboration; and (3) strategies to improve physician–nurse collaboration.

Methods: A literature search was conducted in the following databases: CINAHL, PubMed, Wiley Online Library and Scopus from year 2002 to 2012, to include papers that reported studies on physician–nurse collaboration in the hospital setting.

Findings: Seventeen papers were included in this review. Three of the reviewed articles were qualitative studies and the other 14 were quantitative studies. Three key themes emerged from this review: (1) attitudes towards physician–nurse collaboration, where physicians viewed physician–nurse collaboration as less important than nurses but rated the quality of collaboration higher than nurses; (2) factors affecting physician–nurse collaboration, including communication, respect and trust, unequal power, understanding professional roles, and task prioritizing; and (3) improvement strategies for physician–nurse collaboration, involving inter-professional education and interdisciplinary ward rounds.

Conclusion: This review has highlighted important aspects of physician–nurse collaboration that could be addressed by future research studies. These include: developing a comprehensive instrument to assess collaboration in greater depth; conducting rigorous intervention studies to evaluate the effectiveness of improvement strategies for physician–nurse collaboration; and examining the role of senior physicians and nurses in facilitating collaboration among junior physicians and nurses. Other implications include inter-professional education to empower nurses in making clinical decisions and putting in place policies to resolve workplace issues.

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Background
Physician–nurse collaboration is defined by Petri (2010) as an interpersonal process where physicians and nurses present with shared objectives. Both parties should possess equal decision-making capacity, responsibility and power to manage patient care (Petri 2010). There should also be mutual trust and respect, and open and effective communication in this relationship. Each profession needs to be aware and accept the roles, skills and responsibilities of the other (Petri 2010). Historically, interactions between physicians and nurses were hierarchical (Thomas et al. 2003). Stein first wrote about the 'Doctor-Nurse Game' in 1967, a key study demonstrating that traditional relationships between both physicians and nurses were largely characterized by medical dominance and nursing subservience (Vazirani et al. 2005). Such relationships set physicians firmly in charge and superior to nurses. Nurses were then expected to carry out orders and avoid open communication with physicians whenever possible (Vazirani et al. 2005). Many nurses have described such practice as a stifling experience, which devalued nurses’ professional worth and increased their job dissatisfaction (Sirota 2007).

Hostile and adversarial relationships between both professions still largely exist in many Western countries such as the USA, Italy, Germany, and Asian countries like China and Japan (Morinaga et al. 2008; Papathanassolgou et al. 2012; Rosenstein 2002). Studies found that physicians tend to have rude and intimidating personalities (Robinson et al. 2010; Rosenstein 2002; Rosenstein & O’Daniel 2005). They exhibited disruptive behaviours such as yelling and using abusive language towards nurses. Consequently, nurses experienced a lack of respect and autonomy (Robinson et al. 2010; Rosenstein 2002; Rosenstein & O’Daniel 2005). The ‘friendly stranger’ relationship was also evident in some studies where interactions between physicians and nurses were solely characterized by formal exchanges of information (Kramer & Schmalenberg 2003; Schmalenberg & Kramer 2009). Each party was fairly satisfied with only fulfilling their own tasks and responsibilities towards each other and patients (Kramer & Schmalenberg 2003; Schmalenberg & Kramer 2009). Nonetheless, there is evidence suggesting that physician–nurse relationships are in fact improving and moving slowly towards a collegial or collaborative nature (Kramer & Schmalenberg 2003; Schmalenberg & Kramer 2009). Collegial relationships are characterized by equal trust, respect and autonomy over patient care. Both professions engage in open communication and value each other’s input about patient outcomes (Robinson et al. 2010; Schmalenberg & Kramer 2009). Collaborative relationships are based on mutual respect and trust, though at times nurses are expected to cooperate with physicians (Robinson et al. 2010; Schmalenberg & Kramer 2009). Effective physician–nurse collaboration has been found to greatly improve the quality of patient care and their health outcomes (Hughes & Fitzpatrick 2010; Messmer 2008; Rose 2011). As described, the patterns of physician–nurse collaboration are diverse and this could be attributed to the different attitudes, values and interpersonal skills held by each individual (Rosenstein 2002; Vazirani et al. 2005). Furthermore, behaviours of physicians and nurses are largely influenced by their pre-licensure education and ward cultures, which differ across clinical settings and countries (Hughes & Fitzpatrick 2010; Robinson et al. 2010).

Ineffective physician–nurse relationships have led to work dissatisfaction, a lack of autonomy and poor health among nurses (Lim et al. 2010; Sirota 2007). Such working relationships have also caused many nurses to leave the profession, making retention and recruitment of nurses increasingly difficult (Nelson et al. 2008; Rosenstein 2002; Thomson 2007). Physicians were also reported to be easily frustrated when orders were not carried out timely and communication delivered was unclear. This contributed largely to work dissatisfaction among physicians (Rosenstein 2002; Rosenstein & O’Daniel 2005). Most importantly, ineffective collaboration had a significant impact on patient outcomes by compromising their quality of care and safety, which often led to increased mortality rates (Rosenstein 2002; Rosenstein & O’Daniel 2005). Moreover, poor physician–nurse collaboration was known to affect the satisfaction levels of both patients and family members during their hospital stay (McCaffrey et al. 2010; Robinson et al. 2010).

Aim
Recognizing that collaboration is a two-way interpersonal process, it is important to understand the attitudes of both physicians and nurses towards collaborative practice. This will aid in identifying the areas of improvement for physician–nurse collaboration (Petri 2010; Seitz et al. 2007). This integrated literature review therefore aimed to present the best available
Physician–nurse collaboration

Evidence on physician–nurse collaboration. The specific questions to be addressed in this review include:

1. What are the attitudes of physicians and nurses towards physician–nurse collaboration?
2. What are the factors affecting physician–nurse collaboration?
3. What strategies could be recommended to improve physician–nurse collaboration?

Methods

Search method and process

The search sought to identify published papers in English which reported primary research studies on physician–nurse relationship or collaboration in hospitals. Relevant studies were searched via the following databases: CINAHL, PubMed, Wiley Online Library and Scopus. Key search terms included singly or in various combinations: ‘nurse-physician relations’, ‘attitudes’, ‘inter professional collaboration’, ‘collaboration’, ‘doctor’, ‘nurse’ and ‘hospital’. A manual search was carried out on Journal of Interprofessional Care and using the ancestry approach, reference lists of each retrieved article were reviewed for additional relevant journals. The search was limited to journals published in the last 10 years, from January 2002 to December 2012.

Initial review identified 23 potential articles. Each journal article was then read in full to assess its relevance. Exclusion criteria were also taken into consideration while extracting relevant journals. Studies conducted in outpatient clinics, nursing homes and operating theatres were excluded. Studies that largely discuss inter-professional education (IPE), work conflicts and attitudes of healthcare students towards collaborative practice were also excluded. Studies that explored working relationships between doctors or nurses and other allied health professionals were not considered.

Search outcomes

The search process, and total number of included and excluded articles are illustrated in Fig. 1. A total of six articles were excluded for the following reasons: (1) focus of the study was not largely based on physician–nurse collaboration; (2) explored relationships between physicians and advanced nurse practitioners; and (3) inappropriate target group where medical students, nurses and nurse managers were recruited as participants. Finally, 17 articles were reviewed.

Of the 17 reviewed studies, three were qualitative studies that used focus-group interviews or semi-structured interviews. The other 14 articles were quantitative studies. Ten of them adopted descriptive comparative designs, where questionnaires were used to evaluate the different attitudes physicians and nurses have towards collaboration. Four used experimental designs to evaluate the effectiveness of interventions in improving physician–nurse collaboration. Table 1 summarizes the methodologies and findings of the reviewed studies. These findings were pooled together and categorized into three key themes for discussion.

Results

Attitudes towards physician–nurse collaboration

The reviewed studies adopted different instruments to measure attitudes of physicians and nurses towards collaboration. The ‘Jefferson Scale of Attitudes toward Physician-Nurse Collaboration (JSAPNC)’ has been used in four of the reviewed studies (Garber et al. 2009; Hojat et al. 2003; Hughes & Fitzpatrick 2010; Thomson 2007). Other questionnaires used include ‘Baggs Collaboration and Satisfaction about Care Decisions (CSACD)’, ‘Collaboration & Satisfaction with Patient Care Decisions (CSPCD)’, ‘Collaborative Practice Scale (CPS)’, ‘Intensive Care Unit Management Attitudes Questionnaire (ICUMAQ)’, ‘Nurse-Physician Collaboration Scale’ and ‘Nurse-Physician Relationship Survey’ (Messmer 2008; Nair et al. 2012; Nathanson et al. 2011; Nelson et al. 2008; Rosenstein 2002; Rosenstein & O’Daniel 2005; Thomas et al. 2003). The validities and reliabilities of all these abovementioned instruments were well documented (Dougherty & Larson 2005; Thomas et al. 2003).

The attitudes towards physician–nurse collaboration are categorized into two subthemes – importance of physician–nurse collaboration and the quality of physician–nurse collaboration.

Importance of physician–nurse collaboration

Several reviewed studies found that physicians and nurses valued collaboration (Hughes & Fitzpatrick 2010; Robinson et al. 2010; Rosenstein 2002). Both professions recognized that effective collaboration is essential in bringing about better quality patient care, which ultimately leads to improved health outcomes for patients (Hughes & Fitzpatrick 2010; Robinson et al. 2010; Rosenstein 2002). Two studies supported that physicians and nurses recognized the importance of collaboration in ensuring patient safety, satisfaction, faster recovery and lower mortality rates (Messmer 2008; Rosenstein & O’Daniel 2005).

However, more of the reviewed studies reported that physicians viewed collaboration as less important when compared with nurses (Garber et al. 2009; Hughes & Fitzpatrick 2010; Rosenstein 2002; Thomson 2007). On the contrary, nurses who were more likely to perceive collaboration as an important factor to providing better care demonstrate more interests and have greater desires than physicians to work collaboratively.
Garber et al. 2009; Hughes & Fitzpatrick 2010; Rosenstein 2002; Thomson 2007). The aforementioned studies that used descriptive comparative designs were conducted in various parts of USA and all revealed statistically significant differences between physicians and nurses in their attitudes towards collaboration (Garber et al. 2009; Hughes & Fitzpatrick 2010; Rosenstein 2002; Thomson 2007). Hojat et al. (2003) conducted a cross-cultural study to compare attitudes towards collaboration between 2522 physicians and nurses from USA, Mexico, Israel and Italy. The study reported that despite differences in culture, nurses demonstrated a significantly more positive attitude than physicians towards the importance of collaboration (Hojat et al. 2003).

These different perceptions on the importance of physician–nurse collaboration could be explained by the fact that physicians and nurses have different training and they adopt different care philosophies (Hughes & Fitzpatrick 2010; Sirota 2007). While physicians were traditionally trained to develop technical skills and focus on finding cure for diseases, nurses were trained in developing interpersonal skills with patients and colleagues, providing holistic care for patients and making decisions interdependently with physicians (Hughes & Fitzpatrick 2010; Sirota 2007). As a result of the training that focused on disease management, physicians were generally satisfied to practice independently without much assistance from nurses (Hughes & Fitzpatrick 2010). In contrast, to achieve more holistic care for patients including social and psychological well-being, nurses felt that their valuable perspectives should be considered during times of decision-making (Dougherty & Larson 2005). Nurses, therefore, see physician–nurse collaboration as
<table>
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<tr>
<th>Authors</th>
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| McCaffrey et al. (2010) | To develop, implement and evaluate a 6-month educational and experiential    | Intervention study and regular focus group follow up meetings to evaluate      | Conducted at a hospital in Florida with 50 new medical residents and 65 nurses           | • Overall improvements in communication, collaboration, patient outcomes and job satisfaction  
|                         | program designed for the new medical residents and nurses to improve            communication and collaboration styles.                                         | changes in communication and collaboration styles.                                 |                                                                                                                                                    | • Promoted common goal, open discussion, and acceptance of ideas among residents and nurses.  
|                         |                                                                               |                                                                              |                                                                                                                                                    | • Improved inter-professional communication and collaboration increased patients’ satisfaction.                                                                                                                |
| Garber et al. (2009)   | To examine the attitudes of nurses, physicians and residents towards            | Descriptive, comparative study using The Jefferson Scale of Attitudes toward    | 419 nurses, 61 physicians and 17 residents in Southeastern United States health system were surveyed via the Intranet | • Attitudes of nurses towards collaboration were significantly more positive than that of physicians.  
|                         | collaboration and to assess their self-perception of servant leadership        | Physician-Nurse Collaboration and Barbuto–Wheeler Servant Leadership Questionnaire |                                                                                                                                                    | • Nurses had a significantly more positive self-perception of themselves as servant leaders than physicians do.                                                                                              |
| Hojat et al. (2003)    | To compare attitudes of physicians and nurses towards collaboration in USA,    | Cross-cultural study using The Jefferson Scale of Attitudes toward Physician-Nurse Collaboration | 850 physicians and 1672 nurses from USA, Israel, Italy and Mexico                         | • Regardless of the country, nurses scored significantly higher than physicians on the total attitude scale.  
|                         | Israel, Italy and Mexico.                                                     |                                                                              |                                                                                                                                                    | • The highest mean scores on 'shared education and team work,' 'caring vs. curing' and 'nurses' autonomy' were obtained by American and Israeli nurses, which was significantly different from any physician group.  
| Thomas et al. (2003)   | To measure and compare critical care physicians and nurses' attitudes about  | Cross-sectional study using the ICCUMAQ                                       | 90 physicians and 230 nurses from eight intensive care units in six hospitals in Houston, Texas | • 35% of the nurses rated the quality of collaboration and communication with physicians as high or very high. 75% of physicians rated collaboration and communication with nurses as high or very high.  
|                         | teamwork.                                                                     |                                                                              |                                                                                                                                                    | • Nurses reported that it is difficult to speak up, disagreements are not appropriately resolved, more input into decision-making is needed, and nurse input is not well received.                                                                 |
| Rosenstein & O'Daniel  | To assess the perceptions of the impact of disruptive behaviour on nurse-        | Descriptive study using questionnaire survey designed as a follow-up to previous VHA West Coast survey conducted in Rosenstein's (2002) study | 1091 registered nurses, 402 physicians and 16 executive-level administrators from 50 VHA hospitals across West Coast | • Nurses behaved disruptively almost as frequently as physicians.  
| (2005)                 | physician relationships and patient clinical outcomes.                        |                                                                              |                                                                                                                                                    | • Disruptive behaviour negatively affected both nurses and physicians in terms of stress, frustration, concentration, communication, collaboration, information transfer and relationships.  
|                         |                                                                               |                                                                              |                                                                                                                                                    | • Negative or worsening effects of disruptive behaviour on adverse events, medical errors, patient safety, mortality, quality of care and satisfaction.                                                                 |
| Vazirani et al. (2005) | To determine the impact of a multidisciplinary intervention on a             | Intervention study involved the addition of a nurse practitioner to each medical team, appointment of a hospitalist medical director, and institution of daily multidisciplinary rounds | Conducted in a hospital at Los Angeles, where over a 2-year period, intervention and control units were created involving 111 house officers, 45 attending physicians and 123 nurses | • Physicians in the intervention group reported significantly greater collaboration and better communication with nurses than did physicians in the control group.  
<p>|                         | communication and collaboration among doctors and nurses on an acute            |                                                                              |                                                                                                                                                    | • In contrast, nurses in both groups reported similar levels of communication and collaboration with physicians.                                                                                               |
|                         | inpatient medical unit.                                                       |                                                                              |                                                                                                                                                    |                                                                                                                                                    |</p>
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<td>Messmer (2008)</td>
<td>To determine the level of nurse–physician collaboration during simulation training.</td>
<td>Intervention descriptive study using the KSNPS, Collaboration &amp; Satisfaction with Patient Care Decisions, and Clinical Practice Group Cohesion to evaluate their team performance</td>
<td>55 paediatric medical residents and 50 nurses from a children’s hospital in Southeastern United States formed 18 code teams and underwent three simulation sessions of life-threatening scenarios in children</td>
<td>• High levels of group cohesion, collaboration and satisfaction with patient care decisions were identified among both physicians and nurses. • The three independent observers using the KSNPS reported that with more simulation sessions, collaborative relationships improved with greater communication and collegial exchanges.</td>
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<td>Nathanson et al. (2011)</td>
<td>To measure the degree of similarity of attitudes on collaboration between nurses and junior doctors in the ICU.</td>
<td>Descriptive study using a modified version of the Baggs Collaboration and Satisfaction about Care Decisions instrument</td>
<td>31 nurses and 46 junior doctors from a medical/surgical ICU in the Northeastern United States</td>
<td>• Modest agreement among the participants that decision-making responsibilities are not shared. Nurses perceive this as inadequate collaboration. • Junior doctors were satisfied with collaboration. • Significant difference between junior doctors and nurses’ overall satisfaction with team decisions.</td>
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<td>Weller et al. (2011)</td>
<td>To understand the nature of interactions, activities and issues affecting medical and nursing graduates in order to inform interventions to improve inter-professional collaboration in this context.</td>
<td>Qualitative study using semi-structured interviews</td>
<td>13 junior doctors and 12 junior nurses from hospitals across New Zealand</td>
<td>• A coding theoretical framework was identified, showing the factors necessary for collaboration. • Quality of collaboration: mutual respect, trust, organizational structure or culture. • Shared mental models: how information is shared, shared priorities. • Team coordination: defining roles within the team, coordinating decision-making across the team, team leadership, orienting new team members. • Communication environment: openness of communication, speaking up.</td>
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<td>Hughes &amp; Fitzpatrick (2010)</td>
<td>To evaluate attitudes towards collaboration among nurses and physicians.</td>
<td>Comparative descriptive study using The Jefferson Scale of Attitudes toward Physician-Nurse Collaboration</td>
<td>118 nurses and 53 physicians from a community hospital in the Northeastern United States</td>
<td>• Nurses have a significantly more positive attitude than physicians towards collaboration. • Nurses perceive the importance of shared education more than physicians. Nurses scored higher than physicians on ‘physician’s authority’.</td>
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<td>Nelson et al. (2008)</td>
<td>To describe nurse–physician perceptions of collaboration relationship on general medical surgical units.</td>
<td>Descriptive study using the CPS</td>
<td>95 nurses and 49 physicians from a hospital in San Diego, California</td>
<td>• Statistical significant difference in perceptions of collaborative behaviours between the nurses and physicians. • Nurses lack assertiveness in communicating with doctors their contributions to patient care. • Physicians value and use input from nurses and are comfortable with the role of physician–nurse collaboration improving patient care.</td>
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<td>Thomson (2007)</td>
<td>To determine attitudes of nurses and physicians regarding their collaboration.</td>
<td>Descriptive prospective study using The Jefferson Scale of Attitudes toward Physician-Nurse Collaboration</td>
<td>65 nurses and 37 physicians from a medical centre in Southern United States</td>
<td>• Nurses had more positive attitudes than physicians towards collaboration. • Both shared positive attitudes regarding collaboration in areas of shared education and teamwork, caring vs. curing, and nurses’ autonomy.</td>
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<tr>
<td>Study (Year)</td>
<td>Objective</td>
<td>Design Description</td>
<td>Sample Size</td>
<td>Findings</td>
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<td>Burns (2011)</td>
<td>To determine if ward rounds improve physician–nurse collaboration.</td>
<td>Intervention study where physician–nurse rounds were implemented over 4 weeks,</td>
<td>Nurses and physicians from a 45-bed medical unit in a trauma hospital within a large Midwestern city</td>
<td>• Nurse–physician rounds increased care efficiency. Average number of calls made to physicians decreased after implementation of rounds.</td>
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<td>Miller et al. (2008)</td>
<td>To examine nursing emotion work and inter-professional collaboration in order to understand and improve collaborative nursing practice.</td>
<td>Qualitative study using non-participant observation, shadowing and semi-structured interviews</td>
<td>Conducted in three public hospitals in Canada with 20 nurses, 7 doctors, 18 allied health professionals and 5 administrative/management staff</td>
<td>• Physicians rated atmosphere of work relationships more positively than nurses, viewed work relationships less significant than nurses, and perceived that they value nurses’ inputs and collaboration.</td>
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<td>Robinson et al. (2010)</td>
<td>To explore nurse and physician perceptions of effective and ineffective communication between the two professions.</td>
<td>Qualitative study using focus group interviews</td>
<td>Conducted at a health science centre in the USA, with 18 registered nurses and physicians of at least 5 years of working experiences</td>
<td>• Nurses rated ‘physician awareness of importance of the nurse-physician relationship to nurse satisfaction’ lower than physicians did.</td>
</tr>
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<td>Nair et al. (2012)</td>
<td>To delineate frequently used from infrequently used collaborative behaviours of nurses and physicians in order to generate data to support specific interventions for improving collaborative behaviour.</td>
<td>Descriptive study using the Nurse–Physician Collaboration Scale divided into three subscales: sharing patient information, decision-making process, and relationship between nurse and physician. Items were scored using a 5-item Likert scale (1 = always, 5 = never)</td>
<td>Conducted at an acute care hospital in the Midwest, with 114 nurses and 33 physicians from over 37 clinical specialties.</td>
<td>• Disruptive physician behaviour affected nurse retention rates, satisfaction levels and morale.</td>
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ICU, intensive care unit; ICUMAQ, Intensive Care Unit Management Attitudes Questionnaire; KSNPS, Kramer and Schmalenberg Nurse-Physician Scale; CPS, Collaborative Practice Scale.
more important to achieve better patient outcomes (Dougherty & Larson 2005; Hughes & Fitzpatrick 2010; Sirota 2007).

Quality of physician–nurse collaboration

Three quantitative studies (Rosenstein 2002; Thomas et al. 2003; Vazirani et al. 2005) revealed that physicians rated the quality of collaboration – effectiveness and satisfaction level – higher than that of nurses. For example, Thomas et al. (2003) conducted a study in eight intensive care units (ICUs) within Houston where 90 physicians and 230 nurses were surveyed using the ICUMAQ. Seventy-three per cent \( n = 90 \) of physicians rated the quality of collaboration and communication with nurses as high or very high. However, only 33\% \( n = 230 \) of nurses rated the quality of collaboration with physicians as high or very high (Thomas et al. 2003). The results could be related to how the two professions defined physician–nurse collaboration. Physicians equated collaboration with giving orders and expecting cooperation from nurses to follow through with their decisions (Sirota 2007). Although nurses were able to perform tasks and carry out physicians’ orders correctly, many of them looked forward to having greater autonomy and shared decision-making capacities with physicians to influence patient care (Sirota 2007; Vazirani et al. 2005).

Physicians and nurses’ satisfaction with their collaboration may also be influenced by traditionally rooted stereotypical ideals that society imposes on their roles as healthcare professionals (Hojat et al. 2003; Thomas et al. 2003). Nurses were often viewed as ‘handmaidens’ of physicians, while physicians were perceived as leaders of the healthcare team. The different statuses and autonomy attached with these stereotypical ideals have made collaboration a stifling experience for many nurses (Thomas et al. 2003; Vazirani et al. 2005). Conversely, physicians possess greater power in decision-making which could have caused them to have a lesser interest and thereby lower expectations for effective collaboration (Hansson et al. 2009; Hojat et al. 2003).

Factors affecting physician–nurse collaboration

Many of the reviewed studies have identified major factors that affected collaboration such as communication, respect and trust, and unequal power between physicians and nurses (McCaffrey et al. 2010; Robinson et al. 2010; Rosenstein 2002; Rosenstein & O’Daniel 2005; Thomas et al. 2003; Weller et al. 2011). The lack of understanding about each others’ professional roles and task prioritizing were also found to be influencing factors (Nathanson et al. 2011; Robinson et al. 2010; Rosenstein 2002; Weller et al. 2011).

Communication

Effective communication is essential to building good working relationships between physicians and nurses (Petri 2010) and ensuring patient care is delivered correctly and timely (Sirota 2007). However, four reviewed studies found that communication between both professions tends to be unclear and imprecise (McCaffrey et al. 2010; Robinson et al. 2010; Rosenstein 2002; Weller et al. 2011). This resulted in delayed delivery of patient care and more frequent medical errors that ultimately jeopardized patients’ safety (McCaffrey et al. 2010; Rosenstein 2002). Such problematic communication issues between physicians and nurses were reported to occur more commonly in medical–surgical wards than in ICUs (McCaffrey et al. 2010; Robinson et al. 2010; Rosenstein 2002; Weller et al. 2011). Unlike in medical–surgical wards, a continuous and regular presence of doctors in ICUs enabled nurses to clarify any doubts face-to-face and thereby improve the communication process (Schmalenberg & Kramer 2009). Furthermore, a higher acuity of patients in ICUs may have encouraged greater vigilance among physicians and nurses in ensuring their clarity of communication (Robinson et al. 2010; Sirota 2007).

Ambiguous communication between physicians and nurses has led to unpleasant behaviours, especially among the physicians. A study by Rosenstein (2002) on the perceptions of 720 nurses and 173 physicians from 84 hospitals in Northern California towards collaboration highlighted that nurses often failed to gather all relevant patient information before calling the physicians. This unclear communication caused physicians to raise their voices rudely, which significantly affected the nurses’ attitudes towards patient care and hindered teamwork (Rosenstein 2002). Moreover, Weller et al. (2011) observed that physicians and nurses nowadays communicated more frequently through written patient care records, where information was not always conveyed accurately or read timely. The dependence on electronic messaging systems has also caused more problems in communication between physicians and nurses (Robinson et al. 2010).

Respect and trust

Nurses in several reviewed studies perceived that their effort, professional assessments or inputs regarding patient care were not valued by the physicians (Robinson et al. 2010; Rosenstein 2002; Rosenstein & O’Daniel 2005; Thomas et al. 2003; Weller et al. 2011). This finding was evident across both medical–surgical wards and ICUs (Thomas et al. 2003; Weller et al. 2011). Such dismissive attitudes caused nurses to experience a lack of respect and trust, which significantly hampered the development of a more collaborative physician–nurse relationship (Thomas et al. 2003; Weller et al. 2011). The perceived
arrogance of some physicians further contributed to the hostile working environment, making it difficult to establish respectful relationships (Sirotá 2007; Weller et al. 2011). In contrast, a quantitative study conducted by Nelson et al. (2008) using ‘Collaborative Practice Scale (CPS)’ revealed that physicians actually highly valued and utilized the inputs contributed by nurses. Although this finding was incongruent to the other reviewed studies, the possibility of research biases from single site study and convenience sampling has been acknowledged by the authors (Nelson et al. 2008).

Many reviewed studies found that physicians tended to display disruptive behaviours towards nurses, though sometimes the reverse is observed as well (Robinson et al. 2010; Rosenstein 2002; Rosenstein & O’Daniel 2005). In a qualitative study using focus group interviews, nurses expressed that physicians often used words that were rude and humiliating. This made them feel incompetent and intimidated, which had resulted in a lack of and fear of communication with physicians (Robinson et al. 2010). Other disruptive behaviours reported included yelling, using condescending tones towards another, and berating patients and colleagues. These behaviours had significantly affected the nurses’ work satisfaction, their attitudes towards patients, and perceptions towards collaboration (Rosenstein 2002; Vazirani et al. 2005). It had also compromised the quality and safety of patient care delivered (Rosenstein 2002; Rosenstein & O’Daniel 2005).

Understanding professional roles
Robinson et al. (2010) pointed out that there is a lack of understanding about the unique professional role of nurses, leading to ineffective collaboration between physicians and nurses. Nurses were often perceived by physicians to be only responsible for carrying out their treatment orders (Robinson et al. 2010). Sirotá (2007) highlighted that nurses, who have frequent contact with patients and family members, could actually contribute more to patient care by offering their perspectives and participate in decision-making. However, physicians tend to have minimal insights into these roles of nurses and this could be observed through certain dismissive words or behaviours they exhibit (Sirotá 2007). Hence, the important role of nurses in making such contributions towards patient care is disregarded (Nathanson et al. 2011; Robinson et al. 2010). This inevitably caused nurses to experience a lack of autonomy and lower professional worth with respect to decision-making, which in turn limits the effectiveness of physician–nurse collaboration (Nathanson et al. 2011).

Task prioritizing
Two of the reviewed studies, despite varying in methodological approaches, reported consistently that collaboration was affected by the different priorities physicians and nurses had with regard to patient care (Rosenstein 2002; Weller et al. 2011). The junior physicians in Weller et al.’s study (2011) reported that nurses did not always understand the rationale behind certain treatments. As a result, given limited work time, nurses chose to complete other tasks that they perceived as more important or urgent (Weller et al. 2011). These differences in task prioritizing not only caused physicians and nurses to develop feelings of frustration towards each other, but in some cases led to delays in the delivery of effective patient care (Rosenstein 2002; Weller et al. 2011).

Similarly, junior nurses reported feeling annoyed when physicians chose to disregard certain important concerns they had about patients’ condition and progress (Weller et al. 2011). Stein-Parbury & Liaschenko (2007) explained that this phenomenon could be due to physicians and nurses possessing different knowledge about their patients. Physicians tend to assess patients’ conditions based on objective values such as vital signs and laboratory investigations whereas nurses tend to use more of their intuitions, observations and understanding of human experiences of diseases (Stein-Parbury & Liaschenko 2007). Therefore, it was observed that physicians chose to review patients more promptly when nurses reported factual evidence of deterioration such as vital signs, rather than their general observations of patients (Stein-Parbury & Liaschenko 2007; Weller et al. 2011).

Unequal power
Petri (2010) advocated that physicians and nurses should possess equal decision-making capacity, responsibility and power. However, a descriptive comparative study by Nelson et al. (2008) reported that nurses did not feel confident or assertive enough to communicate and discuss patient care on equal platforms with physicians. Nurses perceived a power imbalance between both professions (Nelson et al. 2008). Hansson et al. (2009) explained that this unequal power could be attributed to the different levels of education, status and prestige that are unique to each profession. Although both aforementioned studies were conducted in medical–surgical wards, similar findings were observed in studies carried out within ICUs (Papathanassoglou et al. 2012; Rose 2011). In several reviewed studies, it was also suggested that interactions between physicians and nurses were strongly influenced by their traditional cultural roots, where typically there was medical dominance and nursing subservience (Hansson et al. 2009; Hojat et al. 2003; Thomas et al. 2003; Vazirani et al. 2005). By possessing more powerful positions, physicians often do not see collaboration with nurses or shared decision-making as being necessary.
for effective patient care. Furthermore, nurses at the same time hesitate to communicate on ground levels with physicians (Hansson et al. 2009).

Another descriptive comparative study by Nair et al. (2012) found that ‘decision-making on care or cure’ was the least frequent physician–nurse collaborative behaviour used by both professions. Physicians tended to dominate the decision-making process whereas nurses were usually seen to simply follow suit (Hansson et al. 2009; Hojat et al. 2003; Nair et al. 2012). As nurses were traditionally more likely to use obliging and compromising conflict management styles and avoid assertive behaviours, it allowed physicians to possess greater authority in clinical decision-making (Nair et al. 2012). This has further contributed to the power imbalance between both healthcare professions (Nair et al. 2012).

**Improvement strategies for physician–nurse collaboration**

Majority of the reviewed studies strongly proposed the implementation of strategies to enhance physician–nurse collaboration. The strategies implemented by four interventional studies include IPE (McCaffrey et al. 2010; Messmer 2008) and interdisciplinary ward rounds (Burns 2011; Vazirani et al. 2005).

**IPE**

McCaffrey et al. (2010) implemented an inter-professional educational program in a hospital setting over a 6-month period, involving 50 medical residents and 65 nurses who worked in medical wards. The program covered topics such as effective communication skills, body language, and essential determinants of good collaborative practice (McCaffrey et al. 2010). The effectiveness of the program was evaluated using focus group interviews. Both physicians and nurses shared that the program has helped them foster comfortable friendships, develop positive communication skills, learn to accept each others’ perspectives regarding patients’ condition, and prioritize patient care together (McCaffrey et al. 2010).

Using a quantitative study approach, Messmer (2008) conducted an inter-professional simulation program in a children’s hospital, where physicians and nurses were exposed to three different life-threatening simulated situations. Their performances and interactions were observed and scored by three independent observers using the Kramer and Schmalenberg Nurse-Physician Scale. The study outcome revealed that with more simulation exposures, physician–nurse collaboration improved significantly where both professions treated each other with greater respect and trust, and gained deeper insights into each others’ roles and responsibilities (Messmer 2008).

**Interdisciplinary ward rounds**

Two intervention studies explored the effectiveness of interdisciplinary ward rounds in medical units in different parts of the USA (Burns 2011; Vazirani et al. 2005). Both studies provided evidence on the effectiveness of daily medical ward rounds in improving the quality of patient care and physician–nurse communication. With effective ward rounds, communication of important information could be done face-to-face and thereby reducing the need for subsequent phone calls to clarify doubts (Burns 2011; Vazirani et al. 2005). A similar outcome was also reported in Schmalenberg & Kramer’s (2009) study, which evaluated interdisciplinary ward rounds in ICUs and specialized units from across 26 hospitals in 2003 and 34 hospitals in 2007 within the USA. The study reported that regular interdisciplinary rounds with active participation from nurses could boost their self-confidence in communicating with physicians. Such intervention also significantly improved physician–nurse collaboration (Schmalenberg & Kramer 2009).

Despite the effectiveness of ward rounds in improving collaboration, the heavy patient workload and insufficient time to complete individual tasks had affected the doctors and nurses’ willingness and sense of urgency to round as a team (Burns 2011; Miller et al. 2008; Rosenstein 2002; Weller et al. 2011). In Burn’s study (2011), it was observed that participation rates in ward rounds declined after the fourth week of implementation. Vazirani et al. (2005) recommended that the implementation and evaluation of interdisciplinary ward rounds be conducted over a longer period, for example, 2 years, in order to observe any significant improvements in physician–nurse collaboration.

**Discussion**

Physician–nurse collaboration is a complex interpersonal process between physicians and nurses. In reviewing the literature on the attitudes of hospitals’ physicians and nurses towards collaboration, it was found that such attitudes have been explored mainly in the hospitals in Western countries, especially those within the USA. Little is known about the attitudes of physicians and nurses towards collaboration in hospitals beyond this region. As a result of possible cultural and social differences, findings of studies conducted in one country or region may not be fully applicable to other countries. A mutual understanding of attitudes towards collaboration can serve as a first step for physicians and nurses to recognize specific challenges both face in working together, and identify solutions to enhance partnership (James et al. 2010). More future studies are therefore needed to continue exploring the attitudes of physicians and nurses towards collaboration in various settings. Besides exploratory studies, the review
identified the need for more intervention research studies that use more rigorous methodology such as randomized controlled trials to evaluate their effectiveness on improving physician–nurse collaboration.

Different types of questionnaires were adopted by the reviewed studies to measure attitudes of physicians and nurses towards collaboration. Although the validities and reliabilities of these questionnaires were well documented, each questionnaire was developed to only intentionally measure attitudes towards certain aspects of collaboration in specific settings (Dougherty & Larson 2005). A broad rather than narrow focus is important in enhancing the understanding of physician–nurse collaboration. Moreover, the findings of this review have identified several factors affecting physician–nurse collaboration in a hospital environment. Future research could aim to develop a comprehensive instrument that explores attitudes in a greater depth and broader scope.

The review identified a considerable amount of literature addressing perceptions towards improving collaboration from physicians and nurses working on the ground level. There has been little research that examined the role of senior physicians and nursing administrators in facilitating collaboration. James et al. (2010) highlighted a need for the executive hospital committee from both medicine and nursing to clarify perceptions and define expectations for the two professions before taking the lead to develop a partnered plan for enhanced working relationships.

In view of unequal power existing between physicians and nurses, policy makers could look more into regulation of the nursing profession whereby nurses are granted more autonomy in making clinical decisions on patient care. To further empower nurses with clinical knowledge and decision-making skills, there could be hospital-based IPE programs for both physicians and nurses to learn from one another. With greater knowledge and capacity to make clinical decisions, it is believed that nurses may become more confident in communication and satisfied with the collaborative practice experience. Furthermore, leaders of the hospital management boards could take more concrete steps to deal with workplace issues such as conflicts and disagreements between both professions, for instance, by creating an open forum and conducting regular discussion sessions for physicians and nurses to resolve differences or share any unpleasant experiences related to collaboration (Rosenstein 2002). Conflict management guidelines could also be drawn up and disseminated to both professions, so that any discontentment can be addressed promptly and effectively.

This literature review has several limitations. Although undertaken carefully and systematically, the listed search strategy might not have identified all the relevant literature. The relatively small number of articles that met the inclusion criteria in this review and their methodological approaches could have introduced bias.

**Conclusion**

This integrated literature review has sought to present the best available evidence on physician–nurse collaboration. The review found that both physicians and nurses working in the hospital setting possessed differing attitudes towards the importance and quality of physician–nurse collaboration. Their attitudes were found to be influenced by factors including communication, respect and trust, unequal power, understanding other professional roles, and task prioritizing. The review also identified strategies such as IPE and interdisciplinary ward rounds that could improve physician–nurse collaboration. More research efforts, along with policy and practice implications, would be key to improving collaborative practice between hospital physicians and nurses.

**Author contributions**

All the above authors have approved the final version of the article. I acknowledge that all those entitled to authorship are listed as authors. Charmaine Tang has contributed to the conception design of the study, acquisition of data, analysis and interpretation of the data, drafting the article, and critical revision of the article. Sally Wai-chi Chan has contributed to the conception design of the study and critical revision of the article. Wentao Zhou has contributed to the critical revision of the article. I acknowledge that all those entitled to authorship are listed as authors.

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