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The Family Medicine Physicians - Nurse Collaboration and Its Relation to Patients' Safety Climate

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ABSTRACT

Background: Quality of treatment and patient safety are linked to nurses and doctors working together effectively. The objective is to evaluate the relationship between patient safety climate in critical care units and nurse-physician teamwork**.**

Research design : Correlational research design was employed.

Setting: King Abdullah Medical City-Mkkah's Family Medicine department served as the study's site. 90 physicians and 210 nurses made up the convenience sample. Two tools were utilized. Tool I, the Collaborative Practice Scale, is a two-part instrument used to evaluate the collaborative behavior of doctors and nurses. Part 1 asks about personal qualities. Tool II: Patient safety climate survey to gauge how doctors and nurses feel about patient safety climate.

The results : showed that both nurses and doctors exhibited a neutral degree of collaborative behavior; overall, nurses' collaborative behavior was higher (58.35) than doctors' (55.25). Physicians and nurses also had a neutral opinion of the patient safety environment. Compared to doctors (126.564), nurses exhibited a higher percentage of regard for the patient safety climate (144.585).

Conclusion: there was significant correlation between nurses-physician collaborative behavior and patient safety climate. Recommendations: conduct in service program and workshop about team work and patient safety and development of an inter-professional collaborative environment to increase nurses' performance as well as improve patient safety climate.

Keywords: Nurses, Physicians, Collaboration behavior, patients Safety, family medicine

INTRODUCTION

New culture supporting collaborative behavior among nurses and physicians is needed to merge the unique strengths of both professions into opportunities to improve patient outcomes (Nair, Fitzpatrick, McNulty, Click, & Glembocki, 2012).). In an effort to improve patient safety, hospitals across the world are turning to outside industries for lessons in communication and quality improvement (Mohammed Shalaby, MostafaShazly, & Mohammed EL-Sayed, 2022).

In order to reduce medical and nursing errors, effective clinical practice must consider human factors in addition to technology system difficulties. Effective communication fosters teamwork.Health care organizations must evaluate their staff for inadequate teamwork and provide programs to improve teamwork and provide them the chance to improve clinical outcomes (Kamel & Rashad, 2019).Collaboration in health care is complementary rolesand cooperatively work, sharing responsibility among health care professionals for problem-solving and making decisions to formulate and carry out patient care plans (McKee, & Porter, 2017).Nurse–physician collaborative In order to provide patient care, nurses and doctors engage in behaviours such as open communication, teamwork, sharing accountability for handling conflict, problem-solving, and collaborative decision-making (Aghamohammadi, Dadkhah, &Aghamohammadi, 2019).

Establishing equal opportunities for each team member to share their knowledge and experience in a setting of mutual respect and trust is the aim of interprofessional collaboration. Hamlan (2015). In the healthcare system, this kind of cooperation is meant to facilitate interactions between different medical specialists in the treatment of patients. Papathanassoglou, Georgiou, and Pavlakis (2017).eanwhile, the concept of nurse–physician

collaboration goes beyond just working together in a common environment. It requires a shared goal, reciprocal duty to provide high-quality care to resolve patient problems. Sharifiyana, Zohari, Dabirian, & Alavi, (2016). Given their crucial roles in patient care and treatment, nurses and doctors must establish an efficient professional partnership. Fish, Hendel, and Berger (2007).Evidence points to a significant role for nurse-physician teamwork in improving disease outcomes, such as the death rate, readmission rate, and complications of the illness, as well as bedsores and ventilator-associated pneumonia. Manojlovich, Ronis, and Antonakos (2009).

Additionally, stress and burnout in nurses might result from a lack of a suitable professional interaction between doctors and nurses (Georgiou, Papathanassoglou, 2020). Karanikola et al. demonstrated that a significant contributing element to nurses' increased ethical stress is a lack of cooperation between doctors and nurses.10. Both parties must be capable of making decisions on their own and having the authority to carry them out in order for there to be true interprofessional collaboration. Both doctors and nurses must understand their professional boundaries and establish appropriate relationships in order for there to be effective nurse-physician collaboration. Depending on their areas of competence, each of them must also participate in the decision-making process. Karanikola and associates (2014).

Effective patient safety is regarded as one of the key tenets in healthcare institutions. The cornerstone of quality patient care is patient safety. It's challenging to comprehend how to make healthcare safer, and it's even more difficult to actually make treatment safer (Vincent, 2011). Without a strong commitment to patient safety and mistake reduction from practitioners, leaders, and even patients, the health care sector will not make meaningful progress towards reducing errors (Youngberg, ed., 2013).

Patient safety is the outcome of measures taken to prevent, minimise, and enhance unfavourable incidents and injuries brought on by the provision of healthcare. Given its emphasis on the more detrimental features of care quality—that is, treatment that is truly damaging rather than just subpar care—patient safety differs from general aspects of medical care (Santiago & Turrini, 2015).

A team's capacity to collaborate effectively can be influenced by a variety of circumstances, many of which arise in the evolving environment of health and social care practice. These elements include: finance as (supporting teamwork, encouraging teamwork), Professional socialisation as (language, personal responses), professional boundaries as (personal values, professional values, interprofessional values), and finely tuned good practice in team work as knowledge, practice methodologies, and ethics (Christensen & Larson, 2013).Therefore, in order to improve patient outcomes and create a more efficient patient safety climate, healthcare personnel need constantly adapt their collaboration methods. To improve and promote the patient safety climate, effective interprofessional teamwork is essential (Brock et al., 2013).

In order to assess and analyse risk and safety, the medical field has adopted a number of human error models and methodologies.The framework for assessing patient safety in the delivery of healthcare was made up of system elements that cooperate to enhance procedures and provide patients with safer treatment (Higham & Vincent, 2021).

Organisations must demonstrate their commitment to patient safety by identifying errors and near-misses through active surveillance based on case findings, retrospective chart reviews, and regular self-assessment to identify high-risk processes, systems, or settings that are prone to errors that could endanger patient safety (Olsen & Aase, 2012, June).

Significant of the study

Contributing factors to patient care errors, nurses cited communication issues with physicians as one of the two most highly contributing factors, (Spector, & Echternacht,(2010).). Effective relationship and collaboration are built on trust, but without trust, team collaboration, along with patient safety, is compromised (Reina, Reina, & Rushton,(2007). It is important for nurses and physicians to develop a new culture of collaboration which merges the unique strengths of each discipline with the mutual goal of quality patient care. (Martin, Ummenhofer, Manser, &Spirig, (2010).)So it is important to understand nurses and physicians collaboration and its effect on patient safety climate in order to improve collaboration between nurses and physicians.

Aim of the study

The present study aimed to assess nurse - physician collaboration and its relation to patients' safety climate at critical care units this can be achieved through:

Research question

What the relation between nurse - physician collaboration behavior and patients' safety climate?

Subjects and Methods

Research Design

Correlation research design was utilized to conduct this study.

Setting
The study was conducted at King Abdullah Medical City-Mkkah's Family Medicine department Health is based on a family medicine model where the Family Medicine department is at the core of providing overall continuity of care for you and your family. The Family Medicine Department at KAUST Health provides a comprehensive, high-quality health care to both male and female patients from birth to all ages. In addition to medical care, our western trained and qualified physicians provide holistic care, encompassing your physical, psychological and social needs. They can help you with short term health problems, long term (chronic) health problems and in supporting you and your family with all aspects of health and well-being.

Sample
The subjects included in the present study consisted of two groups, namely Physicians group and Nurses group. Physicians group: A convenience sample consisted of 210 family medicine physicians who are working in the previous setting. Family Medicine physicians are a team of highly experienced internationally trained doctors with accredited specialism in Family Medicine (General Practice). They are qualified to diagnose and treat a wide range of health problems and can identify when you would benefit from seeing another health specialists and provide a referral for this purpose.Nurses group: A convenience sample consisted of 90 nurses who are working in the previous setting.

Tools
Data were collected by using the following instruments.
Tool (I): The Collaborative Practice Scale:
This tool consists of two parts.
Part (1): Contain personal characteristics of study subjects such as (age, sex, job, qualification, years of experience, martial status and previous training).
Part (2): The Collaborative Practice Scale (CPS) develop by Bankston,(2015) and adabted by the researcher to assess nurses and physicians collaboration behavior. The CPS has two scales, one for nurses contains 14 items and the other for the physicians contains 11 items.
Scoring system: The score of the response answers were ranged from (2) always and (1) sometimes and (0) never. The range of total scores for nurses- physicians collaborative behavior expressed as follow; less than 605 for negative nurses- physicians collaborative behavior, from 605 to less than 355 for neutral nurses- physicians collaborative behavior and ≥ 355 for positive nurses- physicians collaborative behavior. The reliability coefficients' alpha between questions for physicians' collaborative behavior with nurses was 0.86 and reliability coefficients' alpha between questions for nurses' collaborative behavior physicians with was 0.93.
Tool (II): Patient Safety Climate Questionnaire**:**
Patient safety climate questionnaire developed by Sexton et al., (2116) and adopted by the theresearchers to assess nurses and physicians perceptions regard patient safety climate. It It consisted of 42 items distributed on the following 12dimensions.Overall perceptions of safety (4 items).Organizational learning/ continuous improvement (3 items). Team within units (4 items).Non-punitive response to error (3 items). Staffing (4 items). Supervisor/manager expectations and actions (4 items). Communication openness (3 items). Feedback and communication about Error (3 items). Frequency of events reported (3 items).Hospital management support for patient safety (3items). Teamwork across hospital units (4 items). Hospital handoffs & transitions (4 items).Number of events reported (one item).Patient safety grade (1 item).
Responses of participants were measured on five-points Likert Scale ranging from strongly disagree (1) to strongly agree (5), except Two dimensions, frequency of event reported and feedback and communication about errors, ranging from never (1) to always (5). The HSOPS also comprises two single-item outcome measures: the patient safety grade, scored from failing (1) to excellent (5); and the number of adverse events reported by the respondent during the last year, scored from no events (1) to ≥21 events (**O'Daniel, &Rosenstein,. (2008**). The reliability coefficients' alpha between questions was 0.86. A higher patient safety climate score is reflective of higher perceived levels of patient safety climate.

Ethical consideration
The participated nurses and physicians were instructed by the researchers about aim and benefits of the study and verbal agreement was taken before data collection. The participants were assured that their participation was totally voluntary. Information obtained was treated with utmost confidentiality.

Data collection
Preparation of data collection tools was carried out over a period of three months from January to February 2024 after extensive literature of review. The tools were translated into Arabic format. Then the tools were revised for content validity by 5 juries who were experts in the related field, for clarity, relevance, comprehensiveness, and

applicability. Official letter was taken from the Authorized person in the pre mentioned family medicine clinics to facilitate collection of data, and then oral consent was taken from nurses and physicians. 28of study subject was conduct for pilot study (20 nurses) and (8 physicians) were included in pilot study to identify the clarity, time needed and applicability of the tool.

The data collection was taken in two months from June 2024 to July 2024. The data collected by researchers through distributing the questionnaire to nurses and physicians during her work hours, after meeting with unit managers and study subjects to explain the aim of the study to accept their participation as well as organizing and arranging the nurse's participation according to units needs and activities, the average number of collected questionnaire from both physicians and nurses were between 4-5 per day. The collaboration questionnaire took from 15-20 minutes and patient safety climate questionnaire took 20-25 minute to be completed

Statistical design

A compatible personal computer (PC) was used to store and analyze data. The Statistical Package for Social Studies (SPSS), version 24 was used. Data were coded and summarized percentage distribution for qualitative variables. Comparison was performed using chi square test. Correlation among variables was done using Pearson correlation coefficient (Pearson's r, test) to measure of the strength and direction of the linear relationship between the study variables.

RESULT

Table (1): described the personal characteristics of the study subjects. It revealed that the most frequent age group for nurses and physicians was from 25-29 years (37.5%) and (46.2%) respectively. Regarding gender, the majority of nurses (99.0%) were females, and the majority of physicians (93.7%) were males. It also revealed that 59.5% of nurses had more than 10 years' experience. About one quarter of nurses (24.5%), and physicians (25%) were working at the clinic one

Table 1: Frequency distribution of studied participants according to their personal professional work related data

personal professional work related data	**Nurses (n= 210)**		**Physicians (N= 90)**	
	No	**%**	**No**	**%**
Age				
Less than 25 years	33	15.50	**0**	**-**
25-30	77	37.50	32	46.25
30-31	17	7.50	31	36.25
35-40	16	7.00	15	16.25
More than 40 years old	67	32.50	12	1.25
Gender				
Male	3	1.50	84	93.75
Female	207	98.50	6	6.25
Years of experience				
1 year	5	2.00	3	3.75
1-3 years.	19	9.00	23	28.75
4 - 6 years	27	12.00	14	17.50
7 - 9 years.	37	17.50	18	22.50
<10 years	121	59.50	22	27.50

Table 2: described nurses' and physicians' attitude regarding nurse-physician collaboration. There were no statistical significant differences between nurses' and physicians' attitudes toward their collaboration (p>0.05). It was noticed that the nurses have higher mean scores regarding all items of nurses-physician subscales expect for nurses' autonomy.

Nurse-physician collaboration subscales	**Subjects (n=300)**					
	Nurses	**Physicians**			**T-test**	
	Mean ± SD	**Mean**	**±**	**SD**	**T**	**P-value**

Shared education and teamwork	27.575 ± 1.435	27.550	±	1.25	0.091	0.725
Caring versus curing	9.995 ± 1.7	9.68 ± 1.64			1.242	0.215
Nurses' autonomy	11.720 ±1.838	10. 13 ± 1. 14			0.890	0.42
physicians' dominance	7.85 ± 1.11	7.788 ± 1.187			0.461	0.645
Total	58.150 ± 2.313	55.765± 4.870			0.443	0.658

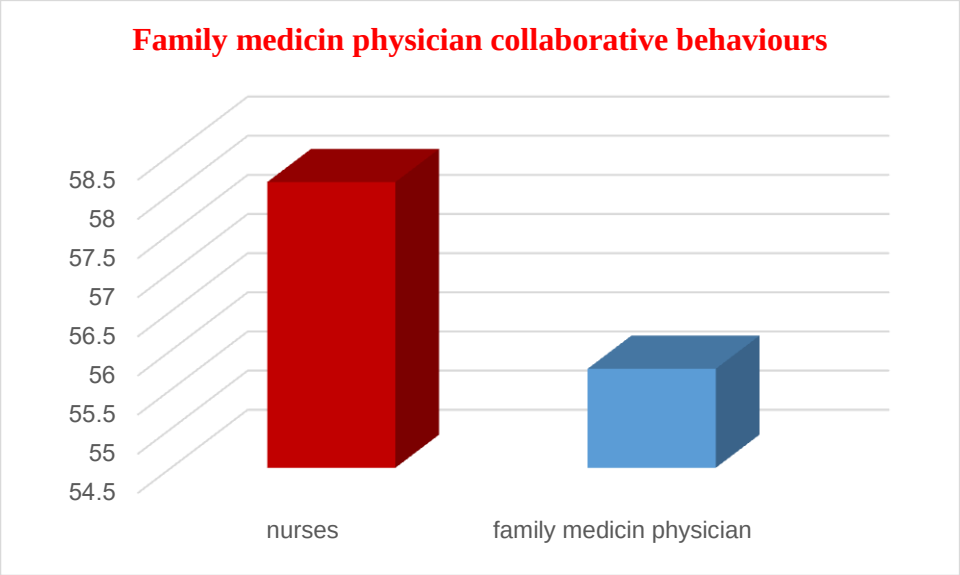

Figure 1: It can be observed that nurses and physicians had a neutral level of collaborative behavior; however, total level of nurses collaborative behavior was higher (58.5) than physician's collaborative behavior (55.765).

Table (3): illustrated that physicians had higher total perception mean scores (144.510±13.525) than nurses (126.963 ±8.227) regarding the patient safety culture. It showed also that there were statistical significant differences between the two groups regarding dimensions of overall perceptions of safety, frequency of events reported and hospital management support for patient safety, with higher physicians' perception mean scores than nurses ($p<0.05$). There were statistical significant differences between the two group regarding the dimensions of team work within units and non-punitive response to error, with higher nurses' perception mean scores than physicians ($p<0.05$).

Table 3: perception of nurses and physicians toward patient safety culture dimensions

Patient safety culture dimensions	**Nurses n=(210)**	**Physicians n=(90)**	T	P value
Overall perceptions of safety	12.745 ± 2.260	14.800 ± 2.631	-6.552	0.000*
Organizational Learning/ Continuous improvement	11.630 ± 2.084	11.375 ± 1.731	0.968	0.334
Team work Within Units	15.205 ± 2.120	14.513 ± 1.772	2.582	0.010*
Non-punitive Response to Error	8.100 ± 2.312	7.338 ± 2.086	2.561	0.011*
Staffing	10.820 ± 2.346	11.088 ± 1.759	-0.921	0.358
Supervisor/Manager Expectations Actions Promoting patient safety	12.395 ± 1.867	12.763 ± 1.022	-1.662	0.098
Communication Openness	8.745 ± 2.429	8.638 ± 2.039	0.350	0.727
Feedback and Communication About Error	10.360 ± 2.914	10.113 ± 1.772	0.709	0.479
Frequency of Events Reported	9.335 ± 2.713	10.550 ± 1.771	-3.701	0.000*
Hospital Management Support for Patient Safety	9.835 ± 2.567	10.625 ± 2.340	-2.384	0.018*
Teamwork Across Hospital Units	13.110 ± 3.262	13.338 ± 2.756	-0.550	0.583

Hospital Handoffs & Transitions	12.230 ± 3.475	11.825 ± 2.773	0.930	0.353
Total	144.510 ± 13.525	126.963 ± 8.227	-1.513	0.131

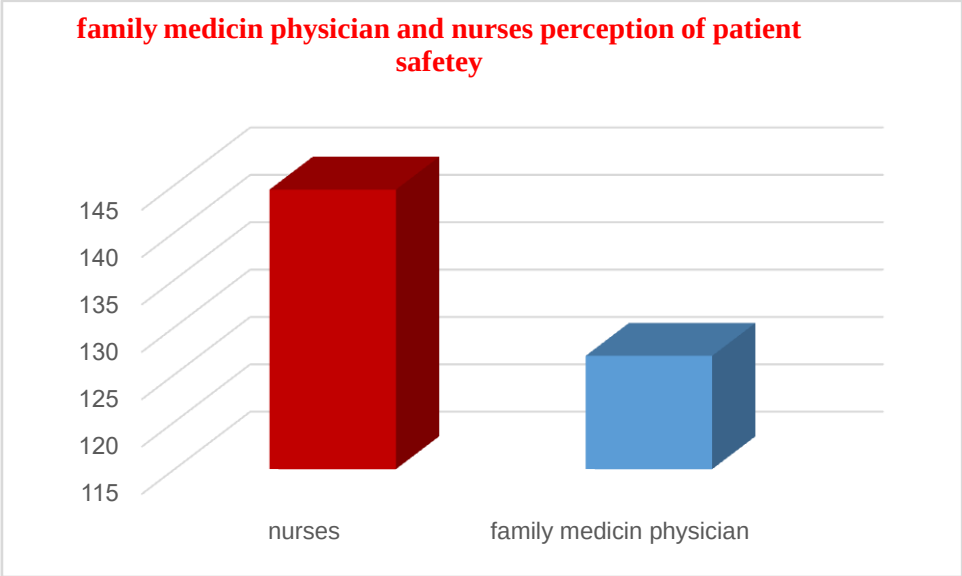

Figure 2: It can be observed that nurses and physicians had moderate level of patient safety ; however, total level of nurses patient safety climate was higher (144.510) than physician's collaborative behavior (126.963).

Table (4): Denoted the correlation between nurses-physician collaborative behavior and patient safety climate. It displayed significant correlation between nurses-physician collaborative behavior and patient safety climate as observed (r=.604, p =.000).

Table 4: Correlation matrix between patient safety and nurses-physician collaborative

	Nurse patent collaborative	**Patient safety climate**
Nurse patent collaborative	**1**	
Patient safety climate	r=.604(p =.000)	**1**

Significant correlation if p value less than 0.01

DISCUSSION

Nurse-physician collaboration is a common strategy to achieve desired quality outcomes in an effective and efficient manner in a complex array of health services. Nowadays, improved inter-professional collaboration is essential to facilitate information flow and the coordination and provision of healthcare within an increasing diversity and provision of healthcare within an increasing diversity meet all patient needs. Collaboration within and across healthcare teams is essential to remove any threats to safety of patients Martin et al. (Martin, Ummenhofer, Manser, &Spirig, (2010)

Since every process carried out by healthcare professionals involves potential hazards and issues in practice, product use, or within certain procedures, a successful patient safety climate is regarded as one of the top concerns for healthcare organizations. Therefore, there is a great deal of interest in creating strategies to enhance the patient safety climate in healthcare organizations, particularly by lowering errors that could have major negative effects on patients and creating an atmosphere that encourages greater motivation, productivity, and teamwork among medical staff. This would facilitate the delivery of superior patient care (Prakash, 2011).

Regarding the collaborative behaviour between nurses and physicians, the current study's findings indicated that the highest percentage of collaborative behaviour reported by nurses was related to finding out that doctors are willing to take responsibility for resolving issues with nurses and asking colleagues about their expectations of participating in health decision-making. According to our research, the health care team shares decision-making in order to provide effective care. Collaborating to overcome challenges requires open communication, mutual respect, trust, and shared responsibilities.

According to Maxson et al. (2016), who conduct research on improving nurse-physician collaboration and communication, staff members recognise the benefits of this type of collaboration and show notable gains in their practice as a result of it. On the contrary, Espinosa et al. (2008), who carried out a study titled Barriers to Intensive Care Nurses Providing Terminal Care, demonstrated that one of the main things impeding effective

care is the limited participation of nurses in decision-making processes as well as disagreements between doctors and other professionals.

Regarding collaborative behaviour between doctors and nurses, the current study's findings showed that doctors who were in charge of discussing various forms of information with patients and discussing similarities and differences between medical and nursing care with nurses exhibited the highest percentage of collaborative behaviour reported by physicians. This is because coordination to address patient requirements and the flow of information are made easier through collaboration. The current study's findings were consistent with those of Vazirani et al. (2013), who found that doctors felt that the team communicated more effectively overall when nurses were included. Additionally, the current study's findings supported those of Kilpatrick et al. (2012), who discovered that when nurses are able to act, communication and decision-making enhance the quality of care.

In terms of collaborative behaviour, the current study's findings showed that while both nurses and doctors exhibited a neutral degree of collaborative behaviour, nurses' overall level of collaborative behaviour was higher than doctors'. Researchers believe that obstacles to positive interprofessional relationships, such as time constraints, unclear job descriptions or a lack of mutual understanding of roles and responsibilities, disparate goals and priorities, divergent customs and professional values, and inadequate organisational support, lead to a neutral degree of collaborative behaviour

Interprofessional collaboration is generally viewed more favourably by nurses, who see it as beneficial when doctors respect their professionalism and autonomy. Physicians had a favourable opinion of teamwork and a good working connection with nurses, according to EL-Sayed et al. (2011). Weaver (2014) discovered that doctors gave their own collaboration with nurses a "very high" rating. On the other hand, nurses gave the quality of their collaboration with doctors a low rating. One major barrier to collaboration, according to nurses, is a negative attitude towards communication. Nurses believe that their connection with doctors is not cooperative and supportive of one another. According to Fewster-Thuente (2011), interdisciplinary collaboration conditions are subpar.

In contrast to Caricati et al. (2013), the current study's results show that doctors score higher than nurses, indicating that doctors are more inclined than nurses to believe that collaboration is preferable to a critical care unit. According to a 2016 study by the Joint Commission on Accreditation of Healthcare Organisations, nurses are less satisfied with nurse-physician teamwork than doctors are. Pamela (2016) discovered that there were fewer nurse-physician collaborative behaviours. On general medical surgery units, nurses and doctors had somewhat different opinions about collaborative behaviours.

Regard the agreement of physician regarding patient safety climate, the highest percent of physician agreed on personnel keep rules or guidelines and the culture in the clinical area makes it easyto learn from the others errors. There wasn't statistical significance difference between two hospitals. This is due to patient safety climate aimed to avoid adverse outcomes and reduce possible harm to a patient from healthcare personnel. So healthcare personnel should be follow hospital rules and guideline to provide safe and effective care.

According to the Institute of Medicine, in the same line, "Health professionals would have the opportunity to learn from their mistakes and institutions would be able to make improvements to prevent future human and system errors within a safe culture where people are not blamed for reporting adverse events."

The current study's findings concurred with those of Smits et al. (2116), who suggested that fostering a positive patient safety climate necessitates a multifaceted approach that includes a variety of measures in the areas of performance enhancement, environmental safety, infection control, medication safety, equipment safety, and safe clinical practice. In relation to agreement of nurses regard patient safety climate. The result of present study showed that, the highest percent of nurses agreed on know the proper channels to direct questions regarding patient safety in the clinical area and personnel keep rules or guidelines. There wasn't statistical significance difference between two hospitals. This is due to the effectiveness of communication and collaboration is the basis of patient safety.

The result of the present study agreed with Health Council of Canada, (2012) proposed that when healthcare professionals communicate effectively and know how to work as a team, the quality of patient care increases. Joint Commission on Accreditation of Health care Organizations,(2016)revealed that nurses reported that, the physicians were open to discuss work-related concerns. Support from physician help to address conflicts appropriately. Gurses&Xiao ,(2014) stated that collaboration among health care providers is a major part of information flow in health care, and a major determinant of expected outcomes.

Concerning the overall proportion of doctors and nurses who care about patient safety climate. The findings of this study showed that while both nurses and doctors had a moderate opinion of the patient safety climate, nurses were more likely than doctors to have this opinion. The results of this study differ from those of Abbas et al. (2016), who found that nurses' perceptions of patient safety were negative. It was discovered by Bscphm et al. (2016) that nurses generally had a favourable opinion of patient safety. The findings of the current study showed a substantial association between the collaborative behavior of nurses and physicians and the climate of patient safety. This is because good teamwork between nurses and physicians is crucial to improving and bolstering patient care and the patient safety environment. The result of present study consistent with **Callahan**

et al., (2016) they stated that health care personnel should continually modify their collaborative processes to make the patient safety climate more efficient for improving patient outcomes. Also**Watters & Moran, (2016)** reported positive outcome rising from nurse-physician collaboration. They suggested that improving patient safety climate is an important part of providing a high quality of patient care, which was also considered as one of the outcomes of inter-professional collaboration.

Furthermore, Bridges et al., (2011) proposed that educating health care professionals about concepts of working collaboratively would enhance the culture of patient safety. Manojlovich et al., (2014) stated that the understanding of health care workers on how to collaborate with each other in order to build an environment that supports a patient safety climate. Hamlan, (2015) he conduct study the relationship between inter-professional collaboration, job satisfaction, and patient safety climate for nurses in a tertiary-level acute care hospital he reported that with the presence of inter-professional collaboration within healthcare organizations and a good collaborative environment for health practitioners, nurses' job satisfaction could increase, in turn, could lead to a better patient safety climate.

CONCLUSIONS

The study's findings can be summed up as follows: nurses and doctors both exhibited a neutral degree of collaborative behaviour, but nurses' overall level of collaborative behaviourwas higher than doctors'.Physicians and nurses also had a neutral opinion of the patient safety environment.Compared to physicians, nurses expressed a greater regard for the patient safety climate.The collaborative behaviour of nurses and physicians and the patient safety atmosphere were significantly correlated..

RECOMMENDATIONS

In the light of the present study the following recommendations are suggested

Offer practical training techniques to improve collaboration between nurses and doctors and to acknowledge the independence and skill of each profession prior to admission to hospitals. enhance interprofessional cooperation and provide high-quality care through develop a new culture for nurses and physicians about collaboration and patent safety which merges the unique strengths of each discipline with the mutual goal of quality patient care. As a crucial component of healthcare organisation growth, provide an interprofessional collaboration environment to boost nurse performance and enhance the patient safety environment.

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