Teamwork Characteristics, Communication Structures, Supervision and Patient Safety in Special Care Units and General Wards in El-Minia University Hospital

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Abstract: Aim of the work: To assess the opinion of nurse about patient safety, to compare the differences between the opinions of nurses working in general wards and special care units about patient safety and to determine the correlations between teamwork characteristics, communications, supervision and patient safety. **Methods:** The sample include of all nurses (n=60) working at medical (n=10) and surgical (n=12) wards and Intensive Care Unit (ICU) (n=12), Cardiac Care Unit (CCU) (n=18) and Renal Dialysis Unit (n=8). Data collected was done through questionnaire forms of socio-demographic variables, Nursing Characteristics Questionnaire and Patient safety Questionnaire. **Results:** The majority of the nurses (65%) had experience attainment of 1-7 years. There was significant difference between the staff of general wards and special units regarding experience attainment. The majority of the nurses (81.7%) had educational attainment of Baccalaureate degree. Patients' safety is significantly correlated with teamwork characteristics, communication structures, and supervision. It also is significantly correlated with overall Nursing response. Patient safety was significantly correlated with special units. The responses of the nurses ranged from undecided to disagree. There were significantly higher mean values of Teamwork characteristics, Communication structures and Patient safety of nurses who works at special units than nurses who works at general wards. **Conclusions:** The study confirmed the hypothesis that patient safety is showing significant positive correlations with teamwork characteristics, communication structures, and supervision of the studied nurses. Teamwork characteristics, Communication structures and Patient safety were higher in special care units than in general wards.**Recommendations:** (1) Cost-effective enhancement of the work environment of units and wards, focusing on management, leadership and teamwork could result in safer patient care. (2) Focus on the educational make-up of the workforce on wards in order to ensure the highest possible proportions of nurses educated to degree level would be beneficial.

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1. Introduction

Patient safety has become a primary focus for healthcare organizations worldwide, and a prerequisite for the provision of effective quality care **(Gardner *et al.*, 2002).**

The international healthcare management program is currently concerned with reducing the risks to which patients are exposed in care settings. Improving patient safety, and thereby improving the quality of healthcare provided, has emerged internationally as a challenge for health care services **(Department of Health and Children, 2008).**

Investigations and inquiries carried out internationally **(Department of Health and Children, 2006; Health Information and Quality Authority (HIQA), 2008; House of Commons UK, 2010)** have consistently identified common deficiencies in patient safety structures. These include poor communication structures, leadership, and teamwork, along with a lack of reporting systems and analysis of adverse events. Insufficient staff knowledge around safety processes, and an acknowledged unsupportive safety culture in healthcare, has been identified as areas to be addressed for the advancement of patient safety **(Department of Health and Children, 2008).**

Central to patient safety strategy internationally is the systems approach to safety. The systems approach is dependent on full and open reporting of adverse events, to maximize organizational learning around the incident, and to prevent its reoccurrence. **Mouillin (2002)** describes adverse events in healthcare as those which either harm, compromise or threaten the safety of patients. Incident reporting remains the first step to finding out what happened in the case of an adverse event, and to promoting patient safety **(Johnstone and Kanitsaki, 2006; Burkoski, 2007).** While this approach to safety in high risk industries such as the aviation industry has been widely acknowledged as a success, its suitability to healthcare is often debated. **Kaplan (2003)** notes that in healthcare it remains a challenge to create a culture

where information about safety can be shared without fear of reprisal. There remains significant reluctance amongst healthcare providers to share information around errors thus giving rise to a climate of guilt, shame, and silence **(Volker and Clark, 2004).**

In a recent report **Levinson (2012)** notes that adverse events often go unreported because healthcare staff either do not know what to report or how to report it.

Nurses play a key role in patient safety, with nurse staffing levels and workload clearly linked to safety **(Aiken *et al.,* 2002a; 2002b; Institute of Medicine (IoM), 2004; Agency for Healthcare Research and Quality, 2007a; 2007b).** In addition the nature of nurses' work is vital to ensuring patients' safety as it routinely involves patient surveillance and co-ordination of care **(Brady *et al.,* 2009).**

Patient safety continues to be the responsibility of all working in healthcare, but the reality is that nurses are the most frequent reporters of adverse events by virtue of their proximity to patients **(Kingston *et al.,* 2004; Cook *et al.,* 2004; Johnstone and Kanitsaki, 2006).**

However, historically nurses have suffered when they have attempted to take a stand on issues of patient care or inadequate standards **(Department of Health and Children, 2006; Matthews and Scott, 2008).**

Such experiences may cause nurses to fear recrimination when they identify adverse events, and therefore chose to forego reporting or, at the very least, allow events to go under-reported **(Johnstone and Kanitsaki, 2006).**

The International Council of Nurses, **(ICN, 2012**) states that nurses have a responsibility to address patient safety in all aspects of their work with patients, including reporting adverse events promptly to the appropriate authority. If errors go unreported they may result in avoidable harm occurring to patients, an undermining of the nurse–patient trust relationship or an undermining of the reputation of the profession **(Johnstone and Kanitsaki, 2006).**

2. Subjects and Methods

The methodology pursued in the conduction of the study is portrayed according to the following

Designs:

1-Technical design
2-Operational design
3-Admisterative design
3-Statistical design

1-TECHNICAL DESIGN

Research design:

An exploratory descriptive research design was adopted to fulfill the purpose of the study.

Aim of study:

The aim of this work is to assess the opinions of nurses about patient safety in El-Minia University Hospital, to compare the differences between the opinions of nurses working in general and special care units about patient safety and to determine the correlations between teamwork characteristics, communication structures, supervision and patient safety.

Research questions:

What are the opinions of nurses about patient safety in El-Minia University Hospital?

Are there any differences between the opinions of nurses working in general and special care units about patient safety?

What are the correlations between teamwork characteristics, communication structures, supervision and patient safety?

Research hypotheses:

It was hypothesized that there are significant differences between the opinions of nurses working in general and special care units about patient safety.

It was also hypothesized that patient safety is significantly correlated with teamwork characteristics, communication structures, and supervision.

Setting:

The study was carried out in El-Minia University Hospital. The hospital wards and units were divided into two groups; general ward including medical and surgical departments as selected for the study and special care units including Intensive Care Unit (ICU), Cardiac Care Unit (CCU) and Renal Dialysis Unit.

Subjects and sample:

The sample include of all nurses (n=60) working at medical (n=10) and surgical (n=12) wards and ICU (n=12), CCU (n=17) and Renal Dialysis Unit (n=9).

Tools of data collection:

Data collected was done through a questionnaire form.

A-Socio-demographic questionnaire form:

This was designed for collection of socio-demographic study variables including wards, experience and educational attainments, work hours and system.

B- Nursing Characteristics Questionnaire:

This was consisted of three sections that reflect teamwork characteristics, communication structures, and supervision. For teamwork characteristics and supervision sections, the level of agreement or disagreement was indicated by chosen the response that best represents the opinion. The available responses for each item range from "Strongly Disagree" with a value of "1", "Disagree" with a value of "2", "Undecided" with a value of "3", "Agree" with a value of "4" and "Strongly Agree" with a value of "5". For communication structures

section, the level of agreement or disagreement was indicated by chosen the response that best represents the opinion. The available responses for each item range from "Never" with a value of "1", "Rarely" with a value of "2", "Sometimes" with a value of "3", "Most of the Times" with a value of "4" and "Always" with a value of "5". The instrument was divided into three subscales; the first was identified as "teamwork characteristics" and included 18 items, the second was identified as "communication structures" and included 11 items, and the third was identified as "supervision" and included 3 items.

C- Patient safety Questionnaire:

Patient safety issues to present patients' injuries and incidents are included in separate section consists of 10 items. The level of agreement or disagreement was indicated by chosen response that best represents the opinion. The available responses for each item range from "Strongly Disagree" with a value of "1", "Disagree" with a value of "2", "Undecided" with a value of "3", "Agree" with a value of "4" and "Strongly Agree" with a value of "5".

2- Operational Design:

Field work:

The actual data collection from the nurses of different wards and units was started, aiming of research. Data collection was conducted by the investigators. The whole duration for data collection tool was about one month.

3- Administrative Design:

An official permission was taken from director of El-Minia University Hospital and oral agreement and consent was taken from practice nurses.

Pilot study was carried out on nurses to find out the differences in the question design in order to modify or clarify them. Modifications were done and final final from was developed.

3- Statistical Design:

Collected data were coded, entered and analyzed using Microsoft Office Excel (2007) software.

Data were then imported into Statistical Package for the Social Sciences (SPSS) version 16.0 and MedCalc version 12.1.3.0 software for analysis. Baseline characteristics of the study population were presented as frequencies and percentages (%) in qualitative data or mean values and standard deviations (SD) in quantitative data. Differences between frequencies were compared by Chi-square or Fisher exact tests. Differences between means were compared by t-test. *P* value of < 0.05 was considered significant. Pearson correlation coefficient test was used to evaluate the inter-correlations between the studied variables.

3. Results

The total number of participants was 60 nurses from different wards and units. Nurses working at medical department were 16.7% (n=10), working at surgical department were 20% (n=12), working at ICU were 20% (n=12), working at CCU were 28.3% (n=17) and working at Renal Dialysis Unit were 15% (n=9).

The majority of the nurses (65%) had experience attainment of 1-7 years. There was significant difference between the staff of general and special units regarding experience attainment. The majority of the nurses (81.7%) had educational attainment of Baccalaureate degree. There was no significant difference between the staff of general and special units regarding educational attainment (Table 1).

Table (1) Socio-demographic characteristics of nurses of general wards and special units of El-Minia University Hospital.

		Special units (n=38)		General wards (n=22)		Total units (n=60)		*Used test, P value*
		No.	%	No.	%	No.	%	
Wards and units	Dialysis unit	9	23.7	-	-	9	15.0	--
	ICU	12	31.6	-	-	12	20.0	
	CCU	17	44.7	-	-	17	28.3	
	Surgical	-	-	12	54.5	12	20.0	
	Medical	-	-	10	45.5	10	16.7	
Experience attainment (years)	1-7	29	76.3	10	45.5	39	65.0	X^2=8.25, *P*=0.016*
	>7-15	6	15.8	4	18.2	10	16.7	
	>15-40	3	7.9	8	36.4	11	18.3	
Educational attainment	Diploma	9	23.7	2	9.1	11	18.3	Fisher exact, *P*=0.19
	Baccalaureate degree	29	76.3	20	90.9	49	81.7	
Work hours	36-<42	18	47.4	6	27.3	38	40.0	X^2=3.35, *P*=0.188
	42-<48	8	21.1	9	40.9	14	28.3	
	48-60	12	31.6	7	31.8	7	31.7	
Work system	Day shift	-	-	-	-	24	40.0	--
	Night shift	-	-	-	-	17	28.3	
	Day-night shift	-	-	-	-	19	31.7	

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level

Table (2) Means, Standard Deviations, and Inter-correlations among the Studied Variables in total nurses.

		Mean	SD	1	2	3	4	5	6	7	8	9
1- Units	***Pearson Correlation***	1.37	.486									
	P-value											
2- Experience attainment	***Pearson Correlation***	1.53	.791	.425**								
	P-value			.002								
3- Educational attainment	***Pearson Correlation***	1.82	.390	.213	.181							
	P-value			.130	.199							
4- Work hours	***Pearson Correlation***	1.92	.850	.064	-.225	-.026						
	P-value			.651	.109	.857						
5- Teamwork	***Pearson Correlation***	2.53	.445	-.421**	-.125	-.004	-.050					
	P-value			.002	.378	.977	.723					
6- Communication	***Pearson Correlation***	2.9	.688	-.434**	-.090	-.072	.061	.782**				
	P-value			.001	.526	.613	.665	.000				
7- Supervision	***Pearson Correlation***	3.06	.855	.029	.060	.190	.192	.601**	.540**			
	P-value			.840	.670	.178	.174	.000	.000			
8- Patient safety	***Pearson Correlation***	2.83	.644	-.381**	-.184	-.030	.044	.612**	.666**	.306*		
	P-value			.005	.193	.835	.756	.000	.000	.028		
9- Overall response	***Pearson Correlation***	2.67	.682	-.328*	-.086	.042	.098	.875**	.892**	.781**	.759**	
	P-value			.018	.546	.768	.489	.000	.000	.000	.000	

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level

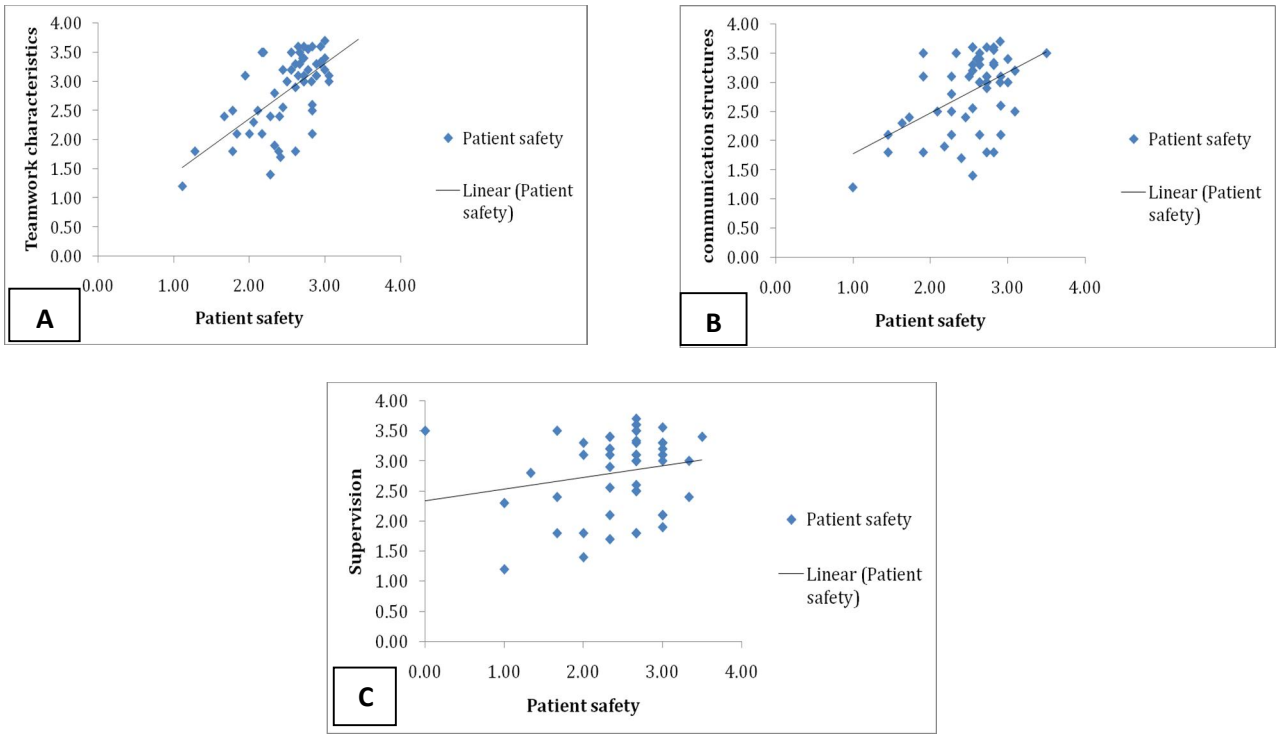

Figure (1) Correlations between Patient Safety and Teamwork characteristics (A), Communication structures (B) and Supervision (C).

The correlations among the study variables are shown in Table 2. Patients' safety is significantly correlated with teamwork characteristics, communication structures, and supervision. It also is

significantly correlated with overall Nursing response. From control demographic variables, patient safety was significantly correlated with special units (Table 2).

Figure (1) shows the significant positive correlations between Patient Safety and Teamwork characteristics (A), Communication structures (B) and Supervision (C).

Table (3) showed the Teamwork characteristics of nurses of general and special units of El-Minia University Hospital. The responses ranged from undecided to disagree. The mean values of the nurses of general and special units of were calculated. There were statistically significant differences between both groups in questions number (3, 4, 7 and 16). There were significantly higher mean values of Teamwork characteristics of nurses of special than general units.

Table (4) showed the Communication structures of nurses of general and special units of El-Minia University Hospital. The responses were mainly undecided. There were statistically significant differences between both groups in questions number (2, 3, 4, 5, 7 and 9). There were significantly higher mean values of Communication structures of nurses of special than general units.

Table (5) showed the Supervision of nurses of general and special units of El-Minia University Hospital. The responses were mainly undecided. There were no significant differences between both groups.

Table (6) showed the Patient safety of nurses of general and special units of El-Minia University Hospital. The responses were mainly undecided. There were statistically significant differences between both groups in questions number (1, 2, 5, 8, 9 and 10). There were significantly higher mean values of Patient safety of nurses of special than general units.

Table (3) Teamwork characteristics of nurses of general wards and special units of El-Minia University Hospital.

	Special units (n=38)		General wards (n=22)		Total units (n=60)		*P value*	*Response*
	Mean	SD	Mean	SD	Mean	SD		
1. Staff treat each other with respect	2.68	.662	2.73	.767	2.70	.696	0.83	*Undecided*
2. Staff support one another	2.79	.843	2.55	.671	2.70	.788	0.26	*Undecided*
3. We have enough staff to handle the workload	2.61	.946	1.91	.921	2.35	.988	0.007**	*Disagree*
4. Staff follow standard procedures to care	2.76	.751	1.91	.811	2.45	.872	<0.0001**	*Disagree*
5. Staff feel like they are part of a team	2.59	.896	2.32	.945	2.49	.917	0.27	*Disagree*
6. Staff use shortcuts to get their work done faster	2.58	.793	2.36	1.00	2.50	.873	0.35	*Disagree*
7. Staff get the training they need	2.58	.919	2.05	.999	2.38	.976	0.042*	*Disagree*
8. Staff have to hurry because they have too much work to do	2.71	.654	2.36	.953	2.58	.787	0.11	*Undecided*
9. When someone gets really busy, other staff help out	2.97	.645	2.57	.978	2.83	.798	0.06	*Undecided*
10. Staff are blamed when a patient is harmed	2.43	.778	2.38	.973	2.41	.848	0.83	*Disagree*
11. Staff have enough training on how to handle difficult patients	2.56	.843	2.15	.988	2.41	.910	0.09	*Disagree*
12. Staff are afraid to report their mistakes	2.61	.704	2.55	1.10	2.58	.865	0.80	*Undecided*
13. Staff understand the training they get	2.58	.874	2.40	.995	2.52	.914	0.47	*Undecided*
14. To make work easier, staff often ignore procedures	2.31	.758	2.45	.999	2.36	.847	0.54	*Disagree*
15. Staff are treated fairly when they make mistakes	2.58	.692	2.40	.883	2.52	.763	0.38	*Undecided*
16. Patients' needs are met during shift changes	2.72	.779	2.05	.826	2.48	.853	0.003**	*Disagree*
17. It is hard to keep patient safe because so many staff quit their jobs	2.58	.841	2.35	.745	2.50	.809	0.29	*Disagree*
18. Staff feel safe reporting their mistakes	2.63	.910	2.40	1.142	2.55	.997	0.39	*Undecided*
Total	2.63	.297	2.35	.592	2.53	.445	0.018*	*Undecided*

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level
Response categories based on the following scale: 1.5 or less= Strongly Disagree; 1.51 to 2.50 =Disagree; 2.51-3.49 Undecided; 3.50 to 4.49= Agree; 4.50 = Strongly Agree.

Table (4) Communication structures of nurses of general wards and special units of El-Minia University Hospital.

	Special units (n=38)		General wards (n=22)		Total units (n=60)		*P value*	*Response*
	Mean	SD	Mean	SD	Mean	SD		
1. Staff are told what they need to know before taking care of a patient for the first time	3.17	.878	2.95	1.32	3.09	1.05	0.44	*Undecided*
2. Staff are told right away when there is a change in a patient's care plan	3.31	.951	2.65	1.23	3.07	1.09	0.02*	*Undecided*
3. We have all the information we need when patients are transferred from the hospital	3.22	.989	2.35	1.04	2.91	1.08	0.002**	*Undecided*
4. When staff report something that could harm a patient, someone takes care of it	3.19	.822	2.60	1.14	2.98	.981	0.02*	*Undecided*
5. We talk about ways to keep incidents from happening again	3.00	.791	2.25	1.12	2.72	.988	0.004**	*Undecided*
6. Staff tell someone if they see something that might harm a patient	3.06	.914	2.80	1.36	2.96	1.10	0.38	*Undecided*
7. Staff ideas and suggestions are valued	2.91	.914	2.00	.745	2.58	.957	0.0002**	*Undecided*
8. We discuss ways to keep patients safe from harm	2.75	.880	2.32	1.00	2.59	.942	0.07	*Undecided*
9. Staff opinions are ignored	3.25	1.05	2.35	.933	2.90	1.09	0.002**	*Undecided*
10. Staff are given all the information they need to care for patients	3.10	.908	3.00	1.16	3.06	.998	0.71	*Undecided*
11. It is easy for staff to speak up about problems	3.15	.834	2.74	1.05	3.00	.929	0.1	*Undecided*
Total	3.08	.537	2.57	.818	2.896	.688	0.005**	*Undecided*

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level
Response categories based on the following scale: 1.5 or less= Strongly Disagree; 1.51 to 2.50 =Disagree; 2.51-3.49 Undecided; 3.50 to 4.49= Agree; 4.50 = Strongly Agree.

Table (5) Supervision of nurses of general wards and special units of El-Minia University Hospital.

	Special units (n=38)		General wards (n=22)		Total units (n=60)		*P value*	*Response*
	Mean	SD	Mean	SD	Mean	SD		
1. My supervisor listens to staff ideas and suggestions about patient safety	3.06	.704	3.10	1.07	3.08	.851	0.86	*Undecided*
2. My supervisor says a good word to staff who follow the right procedures	2.85	.834	3.35	1.35	3.04	1.07	0.08	*Undecided*
3. My supervisor pays attention to patient safety problems	3.15	.906	2.95	1.28	3.08	1.05	0.48	*Undecided*
Total	3.02	.661	3.13	1.12	3.06	.855	0.63	*Undecided*

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level
Response categories based on the following scale: 1.5 or less= Strongly Disagree; 1.51 to 2.50 =Disagree; 2.51-3.49 Undecided; 3.50 to 4.49= Agree; 4.50 = Strongly Agree.

Table (6) Patient safety according to the nurses' opinions of general wards and special units of El-Minia University Hospital.

	Special units (n=38)		General wards (n=22)		Total units (n=60)		*P value*	*Response*
	Mean	SD	Mean	SD	Mean	SD		
1. Patients are well cared for in this unit	3.16	.958	2.55	.759	2.95	.934	0.013*	*Undecided*
2. Management asks staff how the unit can improve patient safety	2.89	1.02	2.15	.988	2.63	1.06	0.008**	*Undecided*
3. This unit lets the same mistakes happen again and again	3.35	.978	3.10	1.33	3.26	1.11	0.41	*Undecided*
4. It is easy to make changes to improve patient safety in this unit	3.11	.936	2.85	1.27	3.02	1.06	0.37	*Undecided*
5. This unit is always doing things to improve patient safety	3.05	.970	2.30	.865	2.79	.995	0.004**	*Undecided*
6. This unit does a good job keeping patients safe	2.86	.867	2.42	.902	2.71	.896	0.07	*Undecided*
7. Management listens to staff ideas and suggestions to improve patient safety	2.68	.973	2.45	.945	2.60	.961	0.38	*Undecided*
8. This unit is a safe place for patients	3.00	.956	2.40	1.05	2.79	1.02	0.028*	*Undecided*
9. Management often walks around the unit to check on patient care	2.92	.924	2.20	.834	2.67	.951	0.005**	*Undecided*
10. When this unit makes changes to improve patient safety, it checks to see if the changes worked	3.11	1.02	2.50	.889	2.89	1.01	0.023*	*Undecided*
Total	3.02	.600	2.49	.595	2.832	.644	0.002**	*Undecided*

*Statistical significant P-value at the 0.05 level, **statistical significant P-value at the 0.01 level
Response categories based on the following scale: 1.5 or less= Strongly Disagree; 1.51 to 2.50 =Disagree; 2.51-3.49 Undecided; 3.50 to 4.49= Agree; 4.50 = Strongly Agree.

4. Discussion

Previous research studies have identified factors which can enhance patient safety outcomes, such as nurse staffing levels and nurse workload **(Kirwan *et al.*, 2012).**

Currently in many countries, the reality for hospitals is actually reduced levels of funding. Healthcare staff and the public in general continue to expect ever-increasing levels of safety and high quality patient care. To meet these demands hospitals need to examine how services operate at the point of care delivery in order to address factors at a local level which can result in improvements to patient safety and quality of care. This research study assessed the opinions of nurses working in special care units and general wards environment, as the point of patient care delivery, to identify locally modifiable factors which can result in safer care for patients in those units and wards.

The study utilized Multi-sectional questionnaire in order to examine the impact of nursing characteristics factors on patient safety outcomes. Such characteristics enabled identification of staff factors which impact safety, and to which, modifications can be achieved with minimal cost implications for hospitals.

The results of this study are consistent with the idea that patient safety outcomes are associated with the teamwork characteristics within which nurses' practice. The teamwork environment has been linked to patient safety outcomes through previous research studies **(Laschinger and Leiter, 2006; Friese *et al.*, 2008; Aiken *et al.*, 2011; 2012).**

The evidence of such studies suggests that when nurses perceive their teamwork environment to be supportive patient safety outcomes are enhanced. The Institute of Medicine's 2004 publication Keeping Patients Safe highlighted the importance of nurses and their teamwork environment to the patient safety process.

In this study a positive teamwork characteristics, specifically at ward and unit level, has been shown to result in higher levels of nurse reported patient safety. The study provides empirical evidence that an optimal teamwork characteristic in a ward/unit can increase patient safety within that ward/unit. Nurses are reliable reporters and the Nursing Work Index has also been validated in one study for use in the measurement of ward/unit level (Mulvey-Boyle, 2004).

Nursing staff in this study documented that they disagree (nurses in general wards) or undecided (nurses in special care units) about the question of feeling safe to report their mistakes.

For the first time, in Kirwan and his colleagues (2012) study, the work environment of nurses is linked to their adverse event reporting rates; specifically it was found that a more positive work environment results in higher levels of adverse event reporting rates by nurses. Under-reporting of adverse events in healthcare is an acknowledged problem and has been linked to fear of punishment or retribution. However adverse event occurrence in healthcare is common and most errors are preventable. Open and transparent reporting of such events facilitates organizational learning and minimizes the chances of reoccurrence.

A recent report from the Department of Health and Human Services (Levinson, 2012) which looks at 195 hospitals suggests that 86% of adverse events which occur to patients in hospital go unreported. Higher adverse event reporting rates are therefore not seen to be indicative of increased event occurrence, but instead indicate a move away from the under reporting which has been a limitation of patient safety schemes up to now. Increased reporting by nurses demonstrates a greater understanding of the systems approach to safety, the worth of full and open investigations of incidents, and a greater willingness to facilitate organizational learning. Investment in the work environment of nurses may reduce levels of under-reporting of adverse events in health care.

Recent work by **Aiken *et al.* (2011)** suggests that improving staffing levels in an inadequate teamwork environment may be counterproductive. It may simply add to costs without having a substantial impact on patient outcomes.

The findings of this study didn't support the associations in previous literature between higher nurse education levels and improved patient safety outcomes outcomes **(*Aiken et al.*, 2003; Estabrooks *et al.*, 2005; Bruyneel *et al.*, 2009).**

This may be because the majority of the nurses (81.7%) included in this study had educational attainment of Baccalaureate degree.

The proportion of nurses with a degree on a ward impacts, both nurse reported patient safety in the unit, and the number of adverse event reports submitted. The Institute of Medicine in the US recommends increasing the proportion of nurses with degrees in wards to 80% by 2020 (IoM, 2010).

Many studies have demonstrated that degree level education contribute towards improved patient safety **(Kirwan *et al.*, 2012)**. Future hospital workforce planning should heed the relationship between the proportion of nurses with degrees at ward level and patient safety outcomes.

Our data revealed that Patients' safety is significantly correlated with teamwork characteristics, communication structures, and supervision.

These findings are consistent with the identified factors of patient safety structures reported by

Department of Health and Children, (2008). These include communication structures, leadership, and teamwork, along with reporting systems and analysis of adverse events. Sufficient staff knowledge around safety processes, and an acknowledged supportive safety culture in healthcare, has been identified as areas to be addressed for the advancement of patient safety.

One of the advantages of this study was the sampling process where between five wards and units of the hospital were included. In this research two general wards were included and three special care units were included. The generalize-ability of the results outside of general wards may be possible.

This study has advanced on previous work investigating the relationships between teamwork characteristics, communication structures, supervision and patient safety outcomes.

The challenge for nurse managers lies in harnessing the nurses' knowledge and using it to enhance patient safety in hospitals and in wards. It would seem that a focus on the educational make-up of the workforce on wards in order to ensure the highest possible proportions of nurses educated to degree level would be beneficial. Furthermore, cost effective enhancement of the work environment of wards, focusing on management, leadership and teamwork could result in safer patient care.

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References

1. **Agency for Healthcare Research and Quality, 2007a.** Hospital survey on patient safety culture. Available from: http://www.ahrq.gov/qual/patientsafetyculture.
2. **Agency for Healthcare Research and Quality, 2007b.** Nurse staffing and quality of patient care. http://archive.ahrq.gov/clinic/tp/nursesttp.htm.
3. **Aiken, L.H.,** . Sermeus**, W.,** Van den Heede**, K.W., et al., 2012.** Patient safety, satisfaction, and quality of care: cross sectional surveys of nurses and patients in 12 countries in Europe. British Medical Journal, 344, p. e1717.
4. **Aiken, L.H., Cimiotti, D.M., Sloane, D.M., *et al.*, 2011.** Effects of nurse staffing and nurse education on patient deaths in hospitals with different work environments. Medical Care, 49 (12).
5. **Aiken, L.H., Clarke, S.P., Sloane, D.M., 2002a.** Hospital staffing, organization and quality of care: cross-national findings. International Journal for Quality in Health Care, 14 (1), pp. 5–13.
6. **Aiken, L.H., Clarke, S.P., Sloane, D.M., *et al.*, 2002b.** Hospital nurse staffing and patient mortality, nurse burnout and job dissatisfaction. Journal of the American Medical Association, 288 (16), pp. 1987–1993.
7. **Brady, A.M., Redmond, R., Curtis, E., *et al.*, 2009.** Adverse events in health care: a literature review. Journal of Nursing Management, 17, pp. 155–164
8. **Bruyneel, L., Van den Heede, K., Diya, L., 2009.** Predictive validity of the international hospital outcomes study questionnaire: an RN4CAST Pilot Study. Journal of Nursing Scholarship, 41 (2), pp. 202–210.
9. **Burkoski, V., 2007.** Identifying risk: the limitations of incident reporting. Canadian Nurse, 103 (3), pp. 12–14.
10. **Cook, A.F., Hoas, H., Guttmannova, K., 2004.** An error by any other name. American Journal of Nursing, 104 (6), pp. 32–44
11. Department of Health and Children, 2006. The Lourdes Hospital Inquiry: An Inquiry into Peripartum Hysterectomy at Our Lady of Lourdes Hospital Drogheda. The Stationery Office, Dublin.
12. **Department of Health and Children, 2008.** Building a Culture of Patient Safety. Report of the Commission on Patient Safety and Quality Assurance. The Stationery Office, Dublin.
13. Department of Health and Human Services, Office of Inspector General (2012) Available at: http://oig.hhs.gov/oei/reports/oei-06-09-00091.pdf.
14. **Estabrooks, C.A., Midodzi, W.K., Cummings, G.G., 2005.** The impact of hospital nursing characteristics on 30 day mortality. Nursing Research, 54, pp. 74–84.
15. **Friese, C.R., Lake, E.T., Aiken, L.H., 2008.** Hospital nurse practice environments and outcomes for surgical oncology patients. Health Service Research, 43 (4), pp. 1145–1163.
16. **Gardner, J.P., Baker, G.R., Norton, P., Brown, A.D., 2002.** Governments and Patient Safety in Australia, the United Kingdom, and the United States: a review of policies, institutional and funding frameworks and current initiatives: a final report. Prepared for the advisory committee on Health Services Working Group on Quality of Health care services. Available at http://www.hc-sc.gc.ca/hcs-sss/pubs/qual/2002-gov-patient-securit/index-eng.php.
17. **Health Information and Quality Authority (HIQA), 2008.** Report of the investigation into the circumstances surrounding the provision of

care to Rebecca O'Malley, in relation to her symptomatic breast disease, the Pathology Services at Cork University Hospital and Symptomatic Breast Disease Services at the Mid Western Regional Hospital, Limerick. Available at: http://www.hiqa.ie/system/files/Rebecca_OMalley_Report.pdf.

18. **House of Commons UK, 2010.** The Mid Staffordshire NHS Foundation Trust Inquiry. Independent Inquiry into Care Provided by Mid Staffordshire NHS Foundation Trust January 2005–March 2009, Vols. I and II. Chairman Robert Francis QC. The Stationery Office, London.
19. **Institute of Medicine (IoM), 2004.** Keeping Patients Safe: Transforming the Work Environment of Nurses. The National Academies Press, Washington, DC.
20. **Institute of Medicine (IoM), 2010.** The Future of Nursing: Leading Change Advancing Health. The National Academies Press, Washington, DC.
21. **International Council of Nurses (ICN), 2012.** Position statement on patient safety. Available at: http://www.icn.ch/images/stories/documents/publications/position_statements/D05_Patient_Safety.pdf.
22. **Johnstone, M.J., Kanitsaki, O., 2006.** The ethics and practical importance of defining, distinguishing and disclosing nursing errors: a discussion paper. International Journal of Nursing Studies, 43, pp. 367–376.
23. **Johnstone, M.J., Kanitsaki, O., 2006.** The ethics and practical importance of defining, distinguishing and disclosing nursing errors: a discussion paper. International Journal of Nursing Studies, 43, pp. 367–376.
24. **Kaplan, H.S., 2003.** Benefiting from the "Gift of Failure" essentials for an event reporting system. The Journal of Legal Medicine, 24, pp. 29–35.
25. **Kingston, M., Evans, S., Smith, B., *et al.*, 2004.** Attitudes of doctors and nurses towards incident reporting: a qualitative analysis. Medical Journal of Australia, 181 (1), pp. 36–39
26. **Kirwan, M., Matthews, A., Scott P.A., 2012.** The impact of the work environment of nurses on patient safety outcomes: A multi-level modeling approach. International Journal Nurse Study. Oct 29; pii: S0020-7489(12) 00302-1.
27. **Laschinger, H.K., Leiter, M.P., 2006.** The impact of nursing work environment on patient safety outcomes. The Journal of Nursing Administration, 36 (5), pp. 259–267.
28. **Levinson, D.R., 2012.** Hospital Incident Reporting Systems Do Not Capture Most Patient Harm.
29. **Matthews, Scott, P.A., 2008.** Perspectives on midwifery power: an exploration of the findings of the inquiry into peripartum hysterectomy at Our Lady of Lourdes Hospital, Drogheda, Ireland. Nursing Inquiry, 15 (2), pp. 127–134
30. **Mouillin, M., 2002.** Delivering Excellence in Health and Social Care. Open University Press, Berkshire.
31. **Mulvey Boyle, S., 2004.** Nursing unit characteristics and patient outcomes. Nursing Economics, 22 (3), pp. 111–123.
32. **Volker, D.L., Clark, A.P., 2004.** Taking the high road. What should you do when an adverse event occurs? Part II. Clinical Nurse Specialist, 18 (4), pp. 180–182.

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