

Impact of Nursing Shortage on Quality of Care at Shebin El-Kom Teaching Hospital

Manal Mohamed Bakr

Nursing Administration Department, College of Nursing, Menoufiya University
dc_manal@yahoo.com

Abstract: Nurses, as the largest group of healthcare professionals through worldwide have experienced significant changes in their work life. They are stressed by limited resources and increasing demands on their services. So the delivery of safe, quality patient care can suffer. **The aim of the study:** Is to examine the impact of nurses shortage on quality of care. **Material and methods:** A descriptive cross-sectional correctional design was used, the study was conducted at Shebin El-kom teaching hospital, simple random sample of 182 staff nurses and convenience sample of 162 patients were recruited from Shebin El-Kom teaching hospital in different units three tools were used first tool, was used to assess shortage of nurses second tool, was used to calculate ratio of nurses to patients third tool, was used to assess patient perception to quality of care. **Results:** The main findings of this study revealed that, the majority of nurses 82.4% agreed on exist of nursing shortage while the highest percentage of patients 67.9% received low quality of care and there was a negative correlation between nursing shortage and patient quality of care. **Conclusion:** It was concluded that there was a negative correlation between nursing shortage and patient quality of care. **Recommendations:** Several recommendations have been drawn, mandatory nurse-to-patient ratios and staffing plans should be establish in the hospitals; build a strong workforce and a culture of consistently high-quality care; limit the use of mandatory overtime to emergency situations, regularly review work schedules, and assess staffing effectiveness. Further researches needed in Egypt on staffing in the hospitals
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1. Introduction

Nurses, as the largest group of healthcare professionals through worldwide have experienced significant changes in their work life. They are stressed by limited resources and increasing demands on their services. These workloads become more substantial and the number of nurses per patient diminishes. This is the current situation of nursing shortage.¹ During a nursing shortage, the delivery of safe, quality patient care can suffer, as the tendency is to create short-term fixes to workforce demands, which ultimately fail to address the real problems.² Not only the quality and patient safety at risk, but also nursing shortages may restrict access to care.³ Nursing shortage refers to a situation where the demand for nurses is greater than the supply.⁴

Shortage is a lack of adequate numbers of skilled practicing nurses, as seen now in most nations world. From an economic point of view, a nursing shortage represents a situation in which hospitals are unable to hire nurses at prevailing wages to achieve the effective staffing desired.⁵ Effective staffing was described as, "Providing optimal numbers of competent personnel with the appropriate skill mix to meet the needs of an organization's patients based on their mission, values, and vision."³ Due to the complex nature and inability to isolate single factors or solutions to this nursing shortage, a systems perspective provides the greatest depth and understanding of the relationship between

multiple variables, which incorporate issues in education, health delivery systems and the work environment. Moreover, the impact of reimbursement, legislation, regulation and technological advances provide for a full appreciation of the nursing workforce shortage complexity.²

Nursing shortage is worldwide phenomena, united state is experiencing a shortage of nurses that will intensify as the nurses age, with shortage is currently in at least 50 states. And it will need an additional million professional nurses by year 2014. by year 2020 it will needs 7 million.⁶ Also Canada reported a shortage of 78,000 nurses by year 2011 and up to 113,000 by year 2016. Over the next 20 years, Australia will lose 60% of registered nurses due to retirement.⁷ And only 15% of nurses are retrieving every five years which creating demand 90,000 nurses by year 2026.⁸

Egypt is not accepted from this phenomena and also experiencing shortage of professional nurses. The total number of nurses in Egypt is estimated to be 202,542 nurses, the majority (almost 90%) of them had a certificate of diploma of nursing and only 6-8% had a certificate of bachelor of nursing. the nurses to population ratio were estimated to be 2.67% nurses per 1000 population. However the professional nurses to population ratio are 0.18 nurses per 1000 population in year 2007. The ministry of health estimates that Egypt suffers from shortage of 44,000 nurses at all levels in year 2008.⁹ This shortage is more evident in upper

Egypt, the government of Aswan alone will need 365 nurses each year for next five years. It was estimated that an approximately 2.36 million nurses will need to deliver health care. It is difficult to say that the overall size of the health workforce in Egypt is appropriate to Egypt's as there are serious imbalances. There is a serious shortage of qualified nurses especially graduate nurses and well-qualified midwives at the same time there is an excess of physicians.¹⁰

Hospitals find competing for nurses by offering the best benefits plans and the highest pay. Some have gone as far as offering house cleaning for new recruits. Major strategies to manage nursing shortage include: improving workforce planning, incorporation of the characteristics of magnet hospital to attract and retain nurses, improving nursing recruitment, retaining nursing staff, improve the image of nursing as a profession and dealing with nurse age factor. In addition, three general approaches to assure sufficient nurse staffing have been proposed. The first is to require hospitals accountable for the implementation of nurse staffing plans, these plans are based upon American Nurses' Association principles for nurse staffing which provide recommendations on appropriate staffing, to assure safe nurse to patient ratios are based on patient need and other criteria. The second approach is for legislators to mandate specific nurse to patient ratios. The third approach is a combination of nurse staffing plans and legislated nurse to patient ratios.¹¹

Nurse to patient ratio become a controversial topic when the state of California despite a huge opposition from hospitals and government. The California Nurse Ratio Law adopted regulations that established minimum, specific and numerical nurse-to-patient ratios by nurse classification and by hospital unit for the acute care settings. Minimum California mandated the ratio in all hospitals and the legislation, signed into law in 1999, took effect on January 2004 and give hospitals year to phase in the changes. Nurse-to-patient ratios would improve the quality of care.¹²

Quality of care can be defined as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. Managers are interested in developing ways of assessing the quality of care provided, which should in turn help to predict the likely impact of changes to staffing levels on patient outcomes. Patient perception of quality of care used as tool to assess the quality of health care provided. They have the right to expect the quality of nursing care as nursing care one of the major components of health care. Patients are the best source of information about a hospital system's communication, education, and pain-management processes. They are the only source of information

about whether they were treated with dignity and respect.¹³

Severe nursing shortage crisis in hospitals and healthcare facilities across the country is expected to get worse. Lack of nurses is affecting healthcare quality with 40% believing that healthcare quality has diminished. Because nurses are unable to spend adequate time with each patient, which reduces attention to detail.¹² Also, Dr. Aiken found that for each additional patient over four in a registered nurses workload, the risk of death increases by 7% for surgical patients. Patients in hospitals with the lowest nurse staffing levels (eight patients per nurse) have a 31% greater risk of dying than those in hospitals with four patients per nurse.¹⁴ Shortage had been a major problem that affects the nurse's ability to detect patient complications early in their development and ability of nurses to maintain patient safety.¹⁵

Significance of the study

In Egypt many health care organizations have not focused sufficiently on relevant nurses workforce issues such as adequate personnel numbers and staff retention. Consequently, nursing shortage became one of the most prevalent issues in the healthcare and the affect it has on patient assessment, diagnosis, and treatment and quality of patient care. For these reasons the nursing shortage has drawn the attention of researcher to expressed alarm to all concerned with the future of the nursing profession to address these challenges through conducting the study impact of nursing shortage on quality of care.

Aim of the study:

This study examined the impact of nursing shortage on quality of care. The following research hypotheses were developed to conduct this study.

- 1- The nurses to patient ratio will be low at teaching hospital.
- 2- The higher the nursing shortage, the lower quality of care to the patients.
- 3- There will be a significant correlation between nursing shortage and quality of care.

Through

Assess nurses to patient ratio, assess nurses perception to nursing shortage, assess quality of patient care and investigate the relationship between nursing shortage and quality of care.

Theoretical framework

Donabedian quality of care model used as a framework guided to the study. He suggested that quality can be divided into different dimensions according to the aspects of care being assessed into structures, processes, and outcomes. Structure' denotes the attributes of material resources (such as facilities, equipment, and financing), human resources (such as the number and qualifications of personnel), and of

organizational structure (such as medical staff, organization, methods of peer review, and methods of reimbursement). Process' denotes what is actually done in giving and receiving care, i.e. the practitioner's activities in making a diagnosis, recommending or implementing treatment, or other interaction with the patient. Outcome' measures attempt to describe the effects of care on the health status of patients and populations Donabedian refers to outcome as a part of quality measurement indicating a change in the patient health status that can be attributed to antecedent health care. Outcomes are: the improvement of social, psychological and physical health status, nursing care, effectiveness, Satisfaction, knowledge of health care regimens, health care behavioral changes. This method has the grates potential to measure the implication of health care and the patient health status after care was given. This model will determine quality of outcomes based on antecedents "structural element and process. Nurse staffing (structural variables) and patient perceptions quality of care (outcome variables).¹³

2. Material and Methods

Design:

A descriptive cross-sectional correctional design was used.

Setting:

The study was carried out in Shebin El-Kom Teaching Hospital.

Subjects:

The subjects included in this study were composed of two groups, namely staff nurses and patients.

Nurses group:

Simple random sample of nurses (182) working in different units of hospital, at least having 6 months in their career and accepted to participate in the study.

Patients group:

Included convenience sample of patients (162) who accepted to participate in the study and fulfill the following criteria: full conscious, stay at least 2 days in the hospital and at least 18 years old. In order to fulfill the objective of the study, the following tools were used:

Tool I: was used to assess shortage of nurses including two parts:

Part I: investigate a hospital administrator's report of a nurse shortage as the reports sound is consider alarm about a hospital nursing shortage.

Part II: Buerhaus et al.¹⁶ scale was used to assess nurses' perception of nursing shortage. it comprised two parts: part one, addressed information related to demographic data such as age, level of education, and attendance of training program. Part two included to the main reasons of nursing shortage, impact of nursing shortage on nurses and patients, employer efforts to improve recruitment of nurses, strategies to solve the

nursing shortage and amount and overtime required. The questionnaire items have 3 points Likert- like format with the following coding: (1) disagree, (2) uncertain, (3) agree. If the subject agreed on 80% or more under any of the categories of reasons for nursing shortage. This category was regarded as being causative factor for shortage. If the subject agree on 80% or more under impact of shortage, the response was considered as the nursing shortage impact negatively on patient and nurses. If the nurse agreed on 80% or more of items under current employer effort to improve recruitment, the response was considered that effort of hospital are enough. if the subject agree on 80% or more of items under strategies to solve the shortage, the response was considered that the strategies needed to address nursing shortage are enough. If the subjects agree on 80% or more of items under amount of regular voluntary overtime, the response was considered that this type of overtime are enough to retain the nurse workforce.

Tool II: was used to calculate ratio of nurses to patient's and included two parts:

Part I: review official statistical records and statistical department data base of hospital to collect data about ratio of nurses to patients. The ratio calculated through the following formula: the total number of nurse engaged in duty/service in a calendar year in hospital divided by total number of patient beds. Use of occupied bed as measure of workload is regarded disfavor because it ignores the severity of patient condition. However it does provide an opportunity for nurse manger to monitor the assignments of nursing staff. The ratio was calculated for each shift based on number of nurses and number of patients at each shift.

Part II: Unstructured interview: An interview of unit nurse managers to ask them only one direct question, what is the average number of staff nurses assigned to the patients in two shifts (morning and evening shifts). Then compares this information with California (USA) mandatory upwardly adjustable minimum nurse: patient ratios. The minimum ratios vary to meet the needs of different units and shifts. California passed legislation in 1999 that established minimum nurse: patient ratios to be implemented in January 2004. The following example of California (USA) mandatory upwardly adjustable minimum nurse: patient ratios.¹

Type of Unit	2008	2009
Medical / Surgical	1:6	1:5
Ante partum	1:4	1:3
Operating Room	1:1	1:1
Post-anesthesia recovery	1:2	1:2
ICUs	1:1	1:1

. Charge nurses and managers are not counted in the ratios.

Tool III: patient quality of care questionnaire. This tool was developed based on EL dahshan et al.¹⁷ and review of relevant literature to assess patient perception to quality of care. It comprised four parts: part one, assessment of patient on admission by 2 items; part two, planning of patient care with 2 items; part three, implementation of patient care with 35 items; and part four, evaluation of patient care with 2 items. The questionnaire items have 3 points Likert- like format with the following coding: (1) disagrees, (2) uncertain, (3) agree. If the subject agreed on 80% or more of items under each part, this part was regarded as being received. For example, If the subjects agree on 80% or more under assessment of patient on admission part, the response was considered as done.

Methods

- The written consent was taken from the study subjects and the approval of the ethical committee was obtained. The researcher explained to nurses the objectives of the study, informed confidentiality and anonymity being assured.
- An interview schedule was developed by the researcher after extensive review of related and recent literature. The tools were revised for content validity by 5 juries, who were experts in the related field.
- The tools were tested for reliability by test-retest technique by 10 students who were interviewed twice at an interval of one week period and data was analyzed and compared.
- The collection of data was started at 30 November 2009 and ended on January 2010, covered three months.

Statistical analysis

Data entry and analysis were done by using statistical package for the social sciences (SPSS Version (13.0). Data was presented using frequencies, number and percentage, mean and standard deviation, chi square and personal correlation.

3. Result

Table 1. Displays the personal and job characteristics of nurses in the study sample. As indicated in the table the highest percentage of the sample had a diploma degree in nursing (44 %), while about (42.9%) had a bachelor degree in nursing. The most respondent characteristics with age <30 years old (40.7 %). And most of them (98.4) were not attended the training program.

Table 2. Represents distribution of nurses in working units at Menoufiya Teaching Hospital. As table shows that the highest percentage of nurses (15.9) working in urology unit. While the same number of nurses (9.9) working in both pediatric and ICUs units. Medical, orthopedic and burn units have the same number (9.3) of nurses that they working in. Also the

same number of nurses (8.8) is working in both obstetric and emergency units and the fewest number of nurses (8.2) working in surgical unit

Table 3. illustrate the nurses to patients ratios at different units at Menoufiya Teaching Hospital. The nurses-to-patient ratio were lower than the standardized California nurses to patient ratio at most of hospital units except ICUs and burn units, they have to some extent high nurses to patient ratio through two shifts(morning and afternoon).ICUs and burn units were (1:3),(1:3) in both shifts. The emergency unit nurses: patient ratio was (1:8),(1:12) followed by urology unit (1:7),(1:10) then both medical and orthopedic units have the same nurses: patient ratio (1:7),(1:9). Also. Both surgical and pediatric units have the same nurses: patient ratio (1:6)(1: 8). The obstetric unit nurses to patient ratio was (1:6),(1:7). And operating room (1:2) in both shift.

Table 4. Shows number and percentage distribution of nursing shortage parameters and the total nursing shortage in Menoufiya Teaching Hospital. As noticed from the table the main reasons for nursing shortage parameter contains that, the highest percentage of nurses agreed that the educational factor, personal factor, organizational factor and societal factor (.85.7%, 83%, 75%, 54.4%) respectively were the causative factors of nursing shortage. Concerning the impact of nursing shortage parameter, the highest percentage (61.5%) of nurses agreed that the nursing shortage has negative impacts on nurses and patients. The strategies to solve the nursing shortage parameter, the highest percentage (58.2%) of nurses agreed that the proposed strategies to solve nursing shortage problem are enough. regarding the amount of regular voluntary overtime parameter, the highest percentage (76.9%) of nurses agreed that paying for overtime should be regular and voluntary amount overtime to retain nurses. While the current employer effort to improve recruitment of nurses, the highest percentage (74.7%) of nurses agreed that the current employer effort to improve recruitment of nurses was not enough. Concerning total nursing shortage parameters, the majority of nurses (82.4%) agreed on existence of nursing shortage.

Table 5. illustrate number and percentage distribution of parameters of patient quality care and total patient quality care parameters in Menoufiya Teaching Hospital. As inferred from this table, all of patients sample (100%) disagreed that they receive the following quality parameters: complete assessment when patient admission to the hospital, health teaching to the patients and their families, and evaluation to the patient health care. Regarding to implementation of patient care, the highest percentage (59%) of patients agreed that they receive physical care,. Concerning psychological care parameter, the majority of patients

(67.3%) disagreed that they receive psychological care while the minority of them (16%) agreed that they got a psychological care. With regard to the total quality of care parameters, the highest percentage of the patients (67.9%) disagreed that they receive quality of care.

Table 6 Describe person correlation coefficient between nursing shortage and patient quality of care. From this table, there was a negative correlation between nursing shortage and patient quality of care.

Table 7. Shows the relationship between nursing shortage and quality of care. The table illustrated that the prevalence of low shortage of nurses is significantly higher among those with moderate quality of care than low quality of care. p- value (< 0.001).

Table 1. Distribution of Demographic Characteristics of Nurses in Menoufiya Teaching Hospital

Socio demographic characteristics	Number (182)	%
<u>Age:</u>		
<30 years	74	40.7
30-40 years	41	22.5
40-50 years	64	35.2
Above 50	3	1.6
<u>Level of education:</u>		
Bachelor	78	42.9
Technical	24	13.2
Diploma	80	44
<u>Attendance of training program:</u>		
Attended training program	3	98.4
Not attended training program	179	1.6
Total	182	100.0

Table 2. Distribution of Nurses in Working Units at Menoufiya Teaching Hospital

Working units	Number of nurses (182)	%
Medical	17	9.3
Surgical	15	8.2
Pediatric	18	9.9
Burn	17	9.3
Operating room	19	10.4
Urology	29	15.9
Orthopedic	17	9.3
Obstetric	16	8.8
ICUs	18	9.9
emergency	16	8.8
Total	182	100.0

Table 3. The Nurses to Patients Ratios at Different Units at Menoufiya Teaching Hospital

Working units	California standard	The nurse to patient ratio	
		Morning shift	Evening shift
Medical	1:5	1:7	1:9
Surgical	1:5	1:6	1: 8
Pediatric	1:4	1:6	1: 8
Burn	1:2	1:3	1:3
Operating room	1:1	1:2	1:2
Urology	1:5	1:7	1:10
Orthopedic	1:5	1:7	1:9
Obstetric	1:4	1:6	1:7
ICUs	1:2	1:3	1:3
Emergency	1:4	1:8	1:12

Table 4. Number and Percentage Distribution of Nursing Shortage Parameters in Teaching Hospital

Nursing shortage parameters	No.(182)					
	Agree		Uncertain		Disagree	
	No	%	No	%	No	%
1- Reasons of nursing shortage:- a- Personal factor (\bar{X} ? SD) 10.73 ±0.66	151	83	31	17	-	-
b- Organizational factor (\bar{X} ? SD) 46.19±3.44	138	75	33	18.1	11	6
c- Societal factor (\bar{X} ? SD) 20.28±1.79	99	54.4	55	30.2	28	15.4
d- Educational factor (\bar{X} ? SD)10.42±0.73	156	85.7	26	14.3	-	-
2- Impact of nursing shortage on patients and nurses (\bar{X} ? SD) 33.63±3.59	112	61.5	40	22	30	16.5
3- Strategies to solve nursing shortage (\bar{X} ? SD) 20.69±2.19	106	58.2	47	26.9	27	14.8
4- Amount of regular voluntary overtime (\bar{X} ? SD)7.54±1.53	140	76.9	31	17	11	6
5- Current employer effort to improve recruitment of nurses (\bar{X} ? SD) 12.33±1.29	136	74.7	32	17.6	14	7.7
Total (\bar{X} ? SD) 88. ±7560	150	82.4	26.	3	6	3.3

Table 5. Number and Percentage Distribution of Parameters of Patient Quality Care in Menoufiya Teaching Hospital

parameters of Patient quality care	No. 162					
	Disagree		Uncertain		Agree	
	No	%	No	%	No	%
1-Assessment of patient on admission (\bar{X} ? SD) 3.0±0.0	162	100	0	0	0	0
2-Planning of patient care (\bar{X} ? SD) 4.29±0.66	102	63	60	37	0	0
3- Implementation of patient care: -a- patient physical care. (\bar{X} ? SD) 51.68±7.06	84	51.9	19	11.7	59	36.4
b-patient psychological care (\bar{X} ? SD) 18.68±3.95	109	67.3	27	16.7	26	16
c- patient health teaching (\bar{X} ? SD) 10.93±1.01	162	100	0	0	0	0
4- Evaluation of Patient care. (\bar{X} ? SD) 3.01±0.08	162	100	0	0	0	0
Total (\bar{X} ? SD) 91.27±9.0	110	67.9	52	32.1	0	0

Table 6 Person Correlation Coefficient Between Shortage of Nurses and Patient Quality of Care.

Parameters	Nursing shortage	
	Pearson's correlation coefficient (r)	p-value
Patient quality care	-0.12	> 0.05

Table 7. Relationship Between Nursing Shortage and Quality of Care.

Nursing shortage	Quality of care				\bar{X}	p- value
	Low quality of care(n=110)		Moderate quality of care(n=52)			
	No.	%	No.	%		
Low shortage of nurses	3	2.7	52	100	148.99	< 0.001
Moderate shortage of nurses	9	8.2	0	0		
high shortage of nurses	98	89.1	0	0		
Total	110	100	52	100		

4. Discussion

The need for nurses is often cyclical in nature throughout the world. Today's nursing shortage will not be resolved by simply returning to the solutions of yesteryear, and strategies to reduce its impact will have to be more creative and focus on the long-term to achieve the right number and mix of personnel needed to provide high-quality care.¹⁸

After examination, the existing nursing shortage reports in Menoufiya teaching hospital, the researcher found two recent major reports which have estimated the total shortage at most of hospital units about necessary recruitment and employment of new staff nurses. Although the report information provide the first clue systematic study of hospital nursing staffing to understand the degree to which the subjective impressions of hospital administrators about a shortage correlate with more objective measures of hospital staffing such as the number of vacant nursing positions.

After analysis' the data obtained from official statistical records, data base department and information obtained from unit managers about number of staff nurses assigned to each patient in selected units, the researcher has found two big issues. The first issue, the nurses-to-patient ratio were lower than the standardized California nurses to patient ratio at most of hospital units except ICUs and burn units in both shifts. This finding in contrast to Carl-Ardy et al.¹⁴ who reported that, the ideal nurse-to patient ratio is 1:4 in ante partum, post partum, pediatric care, and the emergency room and other specialty unit, general medical surgical units the ratio is 1:5. On other hand, when a nurse is assigned more than four patient the risk of death goes up by 7% for each additional patient and the risk goes up 42% for each patient when that nurse's workload goes 10 patient.

The second issue, some nurses in Menoufiya teaching hospital working non nursing activities

(administrative work) and they are away from giving direct care to the patients due to their seniority (old age). The number of senior people was different from unit to unit or from department to another department. For example in surgical unit there were 3 senior nurses, in pediatric unit present 4 senior nurses, ICUs have 2 senior nurses, burn unit has 3 nurses, urology has only one senior nurse, and emergency unit has 3 senior nurse. The researcher expected that the existence of senior nurses considered as a factor lead to increase of nursing shortages crises. And her expectation in line with study that reported nursing shortages affected by factors such as workforce ageing, early retirement (particularly in industrialized countries) and societal trends towards reduced work hours.¹⁹

The present study revealed that, the educational factor, personal factor, organizational factor and societal factor (.85, .7, .83, .75, .54, .4) respectively were the causative factors of nursing shortage. Firstly, the educational factor is most common factor or reason contributing to nursing shortage. This result in agreement with Goodin¹⁸ who reported that, the shortage of stock of qualified nurses seems to be largely the result of the restricted supply of public university nursing education in Egypt because they did not have an adequate number of faculty, clinical practice sites and teaching space. In addition, four main areas were identified as the major contributors to the nursing shortage in the USA: the ageing of Register Nurses workforce; declining enrolment; the changing work climate; and the poor image of nursing. Since nurses often reinforce most of the negative perceptions of nursing careers, they gain legitimacy and tend to sway the youth of today towards sharing these unfortunate viewpoints.¹⁶

Secondly, the personal factor come after in contributing nursing shortage. This result corresponding with Needleman¹⁹ who reported that, the personal factor include: Population, aging workforce, fewer workers, increased career options, job dissatisfaction, increased medical services, increased patient acuity and consumer activism. Another support for this result was expressed by Kevin Grumbach et al.²² who mentioned that, lack of nurses satisfaction, poor job expectation, aging of nursing workforce, and expanded career choices for women all of them considered as a personal factor.

Meanwhile organizational factor also contributing in nursing shortage This result is supported by Aiken et al.¹² who pointed to retention in nursing has addressed the role of organizational structure, staffing pattern, management style and wages on nursing shortage. In addition, at organizational level: job stress, poor planning, poor working conditions, job characteristics, lack of training and development, work overloads, and workplace violence are the main causes of nursing shortage.

Lastly, society factor contributing in nursing shortage. Studies have demonstrated that the current shortage developed as a result of economic workplace, social and demographic forces that came together in the mid to late 1990s these trends are described elsewhere.²⁰ Moreover, nursing for many individuals continues to be a satisfying and rewarding profession only. "with everything in life there is a tradeoff but the benefits to being a nurse to me personally are greater than not being a nurse. The current nursing shortage is connected to both supply and demand factors, demographic changes, population growth, economic factors have also contributed to the nursing shortage because the hospitals had less money to work with and tighter budgets. Also social factors contributed to nursing shortage through: poor perception of nursing as a profession, technological advancement, aging of population, and financial constrain."¹⁹

The present study showed that the majority of nurses agreed on exist of nursing shortage. This result is congruent with American Association of Colleges of Nursing (AACN) that reported, nurses perceive a serious staffing shortfall, fully three in five (61%) hospital nurses say that the nurses at their hospital are responsible for too many patients, whereas only 2% believe that the nurses at their hospital could safely provide care for more patients. In another study, hospitals with low nurse staffing per inpatient year, 55 percent reported a moderate or severe shortage of nurses, compared with 49 percent in the intermediate staffing group and 36 percent in the group with the highest level of nurse staffing.⁸

The study revealed that, there is a negative impact of nursing shortage on nurses and patients. This result

supported by Robert Wood²¹ who claimed that nursing shortage has the following effects: Increase nurses' patient's loads, increases the risk for error, increase risk of spreading infection to patients and staffs, increase risk for occupational injury, increased deaths, increase in nursing turnover, increase perception of unsafe working conditions, and hindering local or national recruitment efforts, increase the nurses chance of getting psychiatric help because of massive amounts of stress..

Meanwhile the current employer effort to improve recruitment of nurses was not enough. This is another indicator for nursing shortage. This result in contrast with other studies that they reported, care center and health advocates are becoming more and more resourceful to answer the demand of hospitals shortages through increase employment, international recruitment, retention through the establishment of educational scholarships, retention grants, elder care training grants, supportive career ladder partnerships between nursing schools and practice settings, loan cancellation for nursing teachers, and public service announcements that promote the nursing profession⁴. Also employment of RNs is expected to grow faster than the average relative to other occupations. For every nurse there are 2 to 3 jobs out there" explains Magdy Mahmoud, manager at Everest Medical Services. He said we are actually planning to bring nurses to the U.S. from overseas.¹⁴

The present study showed that the strategies to solve nursing shortage problem were enough. These strategies include: clear plan for nurses distribution all over the country, improve working environment, improve wages and benefits, higher status of nurses in the hospital environment, better work hours, increase capacity to educate and train nurses, programs (non financial) to encourage people to enter the field of nursing, recruitment of male nurses and assistant personnel. This result is consistent with that of Buerhau et al.¹⁶ who reported that, there was no single cause of the shortage and there is no single solution to resolve it. Hospitals have started recruitment and retention programs, used more temporary and traveling RNs to raise staffing levels, increased their use of float pools nurses. Float pool nurses are nursing staffs employed by the hospital to work in any unit within the organization.

Furthermore, and in agreement with the present study findings, The Center for Nursing Advocacy suggested that, the nursing shortage issue receive more media coverage to educate the nation on the seriousness of the shortage and public awareness of the problem improves. This approach makes inferences about nursing shortages by measuring the supply of nurses relative to the overall population in a region rather than relative to the number of hospital beds or

hospital days. Increasing nurses' pay and financial incentives is another avenue that helps to alleviate the nursing shortage.²²

The study has revealed that, the highest percentage of nurses agreed that paying for overtime should be regular and voluntary not under pressure to retain nurses. This result supported by Ndeti et al.²³ who mentioned, the mandatory overtime was utilized originally as a way to effectively staff during an unexpected event, such as a disaster or flu epidemic. However, today it is used frequently to cover routine personnel shortages. Association bargaining units already have gained contract language that limits or eliminates forced overtime. Mandatory overtime raises nurses' concerns about patient safety and growing danger to patient safety posed by forced overtime practices in hospitals.

The present study revealed that, the highest percentage of the patients agreed that they receive low quality of care and all of them didn't receive assessment when they admitted to the hospital, health teaching and evaluation to their health condition also they didn't receive psychological care. This result is consistent with that of Vom et al.²⁴ who found that much of necessary patient care was not being done and patient care was missed in 9 major areas including surveillance, discharge planning, patient teaching, ambulation, turning, feedings, emotional support, hygiene and intake and output documentation. In addition, patient response to nursing care provided include social, physical, psychological, education care and patient evaluation of services either negative or positive. Moreover, studies have identified poor quality of care provided by some nursing facilities, hospitalized patients report problems of obtaining emotional support and relate their dissatisfaction with discharge planning, family participation, communication, and education.¹²

Moreover, and in agreement with the present study findings Stuart^{25, 1} who found that, 78 percent of registered nurses believed that the nursing shortage has negatively affected the quality of patient care while 91 percent say, it has impacted the time nurses can spend with patients. Furthermore, an inadequate quantity of skilled nurses in clinical settings has a significant negative impact on patient outcomes including mortality and impairing the health and wellbeing of many millions of the worlds people. The present study revealed that, there was a negative correlation between nursing shortage and quality of patient care.

Conclusion and Recommendations

On the light of the current study findings, it is concluded that the majority of nurses agreed on exist of nursing shortage while the highest percentage of patients received low quality of care and there is a

negative correlation between nursing shortage and patient quality of care. From this study several recommendations have been drawn in nursing practice, nursing education and nursing research. Both healthcare organizations and the nursing profession must collaborate to evaluate and monitor the best possible staffing models and methods to maintain competence. Mandatory nurse-to-patient ratios and staffing plans should be establish in our hospital.

Build a strong workforce and a culture of consistently high-quality care: through focus on devote resources to strengthen leadership at all levels, implement benchmark human resource processes, and grow the next generation of nurses. health care organizations should have a proper staffing through: develop quality staffing plans, monitor staffing level mix, and competency, cross train staff to ensure staffing adequacy, delegate (assign) duties appropriately, regularly assess staffing plans, limit the use of mandatory overtime to emergency situations, regularly review work schedules, and assess staffing effectiveness. Further researches needed in Egypt on staffing in the hospitals.

Corresponding author

Manal Mohamed Bakr

Nursing Administration Department, College of Nursing, Menoufiya University

dc_manal@yahoo.com

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