

## Performance of head nurses management functions and its effect on nurses' productivity at Assiut University Hospital

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**Abstract:** This study aims to determining the performance of management functions of head nurse managers, measuring nurses' productivity, finding out the effect of management functions of head nurse managers on nurses' productivity.

**Subjects and Methods:** The subjects consisted of head nurses and nurses working at medical units, surgical units, casualty ICU and post operative ICU. Their total numbers are twenty one head nurses and ninety five nurses. Data collected for the period of six months by observation of nurses and by interviewing head nurses and nurses for personal data.

**Tools of data collection:** Head nurses and nurses' information sheet, head nurses' questionnaire, nurses' activity analysis and productivity formula.

**Results:** Nursing productivity was forty percent at medical units; fifty two percent at surgical unit, one hundred five percent at casualty intensive care unit, and one hundred fifty two percent at post operative ICU.

**Conclusions:** There is correlation between head nurses' management functions and nursing productivity at medical units, surgical unit, post operative ICU, casualty intensive care unit.

**Recommendations:** Providing training program for nurse managers and nurses to improve performance, decrease wasted time, and increase patient care time. Productivity should be periodically measured to monitor the performance of nurses and head nurses and inform nurses to improve their skills.

**Key words:** performance – Productivity -Head nurses-Staff nurses

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### I. Introduction

Nursing as service field, is highly labor-intensive, making nursing management particularly challenging because of the wide variety of experience and educational backgrounds of the employees in the health care setting. The types of work, as well as the workers, challenge the nurse manager to create the kind of environment that facilitates quality nursing practice. The nurse manager has specific responsibilities to the organization and to staff. The staff, in turn, has responsibilities to the organization and to the manager. The beginning nurse will contribute to the success of the unit's efficiency by being aware of the manager's role (Grohar and Droce, 2005).

The nurse manager is accountable for excellence in the clinical practice of nursing and the delivery of patient' care on a selected unit within a health institution. This function (clinical practice) is the primary focus of the nurse manager to meet this responsibility. The nurse manager has the authority to plan and implement strategies and programs consistent with the organizational policies, goals and objectives, as well as with professional standards. She is responsible for maintaining a safe and caring environment that promotes health teaching, assessing patients and families, response to nursing care as well as evaluating the effectiveness and quality of care and services (Sullivan, 2009).

The responsibility of overseeing hospital patient care units falls directly on the shoulders of first line nurse managers with an expectation of producing high-quality, low cost care. Achievement of patient clinical outcomes and satisfaction levels is embedded within this expectation (Kinneman et al, 2001).

A first –line manager is responsible for supervising the work of non managerial personnel and the day to day activities of specific work unit. She is responsible for clinical nursing practice, patient care delivery, utilization of human, fiscal and other resources, personnel development, compliance with regulatory and professional standards, fostering interdisciplinary, collaborative relationships, and strategic planning (American Organization of nurse Executives, 1992). With primary responsibility for motivating the staff to achieve the organizational goals, the first –level managers represent staff to upper administration, and vice versa. Nurse Manager's have 24-hours accountability for management of a unit or area within a health care organization .In a hospital setting, the first -level manager is usually the head nurse, nurse manager (Sullivan, 2009).

Three management functions influence the productivity of unit personnel differently. These functions include clinical practice, managerial, and educational (Bowman, 1995). Although leadership of the first-line

managers is the primary driving force, time and effort expended in operation detract from this unit output (**Richard et al, 1999**).

Productivity is the organization's output of products and services divided by its input (**Daft, 2000**). Productivity is defined as the contribution made towards an organizational end results in relation to the amount of resources consumed (**O' Brien-Pallas et al, 2004**). Productivity measures both quantitative and qualitative factors such as goal attainment and work accomplished (**Bain, 2009**).

Productivity of individual nurses has been rarely studied; more attention has been given to the relation between organizational performance and work unit effectiveness and patient outcomes (**Ancona, 1993**). Productivity can be calculated by dividing the provided staff hours by the required staff hours. Improvement of productivity can be increased by increasing the provided staff hours while holding the required staff hours constant (**Toomey, 1997**). The easiest method for controlling labor input is to measure the requirement for care then schedule nursing personnel to meet the expected demands (**Sullivan and Decker, 2005**

Nurse managers are responsible for improving [nursing productivity](#) within the hospital environment and use every opportunity to build a productive and cohesive team (**Richard et al, 1999**).

## **II. Aim of the Study**

- 1-Determine the performance of management functions of head nurse managers.
- 2-Measure nurses' productivity.
- 3- Find out the effect of management functions of head nurse managers on nurses' productivity.

## **III. Material and Methods**

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

- I- Technical design.
- II- Administrative design.
- III- Operational design.
- IV-Statistical design

### **I- Technical design.**

This design involves the study design, sample, setting, and tools of data collection.

### **Study design**

Descriptive, analytical, and observational designs were followed in the conduction of the study.

### **Setting**

The study was carried out at casualty, post operative care units (ICUs), medical units, and surgical units at main Assiut University Hospital.

### **Subject:**

The study subject consisted of all head nurses and nurses working at general medical units, surgical units, casualty ICU and post operative ICU at main Assiut University Hospital during the period of data collection (6months). Their total numbers were 21 head nurses and 95 nurses.

### **Tools of data collection:-**

The first tool contains two parts:

#### **Part 1: Socio-demographic data:**

This part involved socio-demographic data of head nurse and nurses to collect information about head and nurses working in the designated units: unit, name, sex, age, marital status, years of experience and education.

#### **Part II: Management functions questionnaire:**

This part concerned with structured interview questionnaire about management functions first -line nurse managers. Three management functions questionnaire that developed by Fox (2004) were used to measure management functions of the head nurse managers. Three categories including 34 responsibilities were studied:

- 1-Clinical practice: (11) items.
- 2-Managerial: (17) items.
- 3-Educational: (6) items.

Responses measured on a 5 points likert scale ranging from (5) = always, (4) = frequently, (3) = sometimes, (2) = never, (1) = seldom.  
(High=more than 60%, Low=less than 60%).

**The second tool contains:**

2) Nursing activity analysis: An observation of the nurses to monitor the actual time of patient care every 15 minutes for 6 days work period during period of data collection.

Calculating productivity of the staff nurses: were done by using the following formula:

$$\text{Productivity} = \frac{\text{Actual hours}}{\text{Target hours}} \times \text{Certain period of time}$$

(Armstrong, 2001)

**Productivity is the percentage of:**

- The actual time: Observe nurse and write briefly what she done every 15 minutes.
- Totaling the number of times of an activity was performed.
- Convert observations to hours by divide by 4 the total number of observations entered for each level.
- Convert from hours to percent by dividing the number hours for each level by the total number of hours for all levels for each category.
- The actual time spent (as observed) during 6 hours of the period of data collection.
- Target hours: The time that must be spent (as expected).

**II. Administrative design:**

Official approval to carry out this study obtained from the hospital director, nursing director of Assiut University Hospital, the heads of designated units, and finally from the nurses who participated in the study the selected units.

**Ethical considerations:**

- The study proposal took agreement from the ethical committee in the faculty of nursing –Assiut University.
- Letter of approval to the heads of selected units.
- Approvals of the selected nurses for helping in data collection were secured.
- Nurses have the right to participate or to refuse in the present study, and then oral agreement was obtained from participated nurses.
- Confidentiality of obtained information.

**Operational design:**

**Preparation phase:-**

This phase included the following:

1. Reviewing the available literature concerning the topic of the study.
2. Performing needed modification and translation and retranslation of the tools.

**Phases of data collection:**

The data collection of the present study was carried out within six months period started from May to August. Data collected by the researcher herself and the help of four newly graduated registered nurses to participate in observation after training them before the starting of data collection. The training included: Explaining item included in the study, accompanying the selected nurses in the collecting the data in the shift after assuring that they understand the tool correctly, and worked with them to collect the real data.

Head nurses' information sheet and questionnaire were used to gather data through personnel interview with each one. The interview took about 15 minutes for each one. Observation of nurses at the morning shift only from 8 am: 2pm (6 hours per day) for 6 days period by the different activities including areas and skill levels of such activity. The areas of activities were patient, staff and unit centered activities. Skill levels of activities were administration, nursing, clerical, dietary, housekeeping, messengers and unclassified.

**IV. Statistical design:-**

**Statistical analysis**

Data entry and statistical analysis were done using SPSS 16.0 statistical software package. Data management was done according to the guidelines of US Department of Health, Education, and Welfare

(USDHEW, 1964). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. In larger than 2x2 cross-tables, no test could be applied whenever the expected value in 10% or more of the cells was less than 5. Spearman rank correlation was used for assessment of the inter-relationships among ranked variables. Statistical significance was considered at p-value <0.05.

#### IV. Results

**Table (1): Socio demographic characteristics of the head nurses and staff nurses.**

	Nurses category			
	Head nurse (n=21)		Staff nurse (n=95)	
	No.	%	No.	%
<b>Age(years):</b>				
<30	-	0.0	44	46.33
30+	21	100	51	53.7
Mean ±SD	37.4±7.6		31.3±8.0	
<b>Sex:</b>				
Male	-	-	19	20
Female	21	100	76	80
<b>Marital status:</b>				
Single	-	-	17	17.8
married	21	100	78	82.2
<b>Educational level:</b>				
Bachelor degree	19	90.5	-	-
Nursing diploma	2	9.5	95	100
<b>Experience(years):</b>				
<10	6	28.6	38	40
10+	15	71.4	57	60
Mean ±SD	15.3±8.5		13.1±7.4	

Table (1) describes socio demographic characteristics of the head and staff nurses. The table shows that the mean age of head nurses was (37.4±7.6) compared to (31.3±8.0) for staff nurses. Most (80%) of the sample were females. Regarding to marital status (100%) of head nurses were married, compared to (82.2%) of staff nurses. Most (90.5%) of head nurses having bachelor in nursing, while all (100%) of staff nurses having nursing diploma school. The mean years of experience of head nurses was (15.3±8.5) compared to (13.1±7.4) for nurses. The highest percentage of head and staff nurse (47.6% and 46.3%) at medical unit, while the lowest percentage (4.7%) of head nurses in post operative intensive care unit.

**Table (2): Management functions as reported by head nurses in the study sample (n=21)**

Management functions		always		frequently		sometimes		never		seldom	
		No	%	No	%	No	%	No	%	No	%
<b>Clinical practice:</b>											
1	Determining nursing policy	15	71.4	3	14.3	3	14.3				
2	Identifying patient 'needs	16	76.2	3	14.3	2	9.5				
3	Prescribing nurses 'work	15	71.4	6	28.6						
4	Planning nursing care	9	42.8	9	42.8	3	14.4				
5	Delivering nursing care	11	52.3	4	19.2	5	23.8	1	4.7		
6	Integrating the work of the ward team	17	80.9	2	9.5	2	9.5				
7	Setting nursing standard	13	61.9	8	38.1						
8	Evaluating nursing care	14	66.6	5	23.8	2	9.5				
9	Fulfilling nurses' legal obligations	14	66.6	7	33.4						
10	Fulfilling nurses 'ethical obligations	15	71.4	6	28.6						
11	Ensuring the independence of patient	9	42.8	9	42.8	3	14.3				

Mean ± SD		50.0 ± 6.43									
<b>Managerial:</b>											
1	Deciding what work has to be done	17	80.9	2	9.5	2	9.6				
2	Allocating work	19	90.5							2	9.5
3	Co-coordinating the work of the ward team	19	90.5							2	9.5
4	Ensuring accountability for work done	20	95.3	1	4.7						
5	Monitoring the work of nurses.	18	85.7	3	14.3						
6	Ensuring adequacy of resources	21	100								
7	Organizing resources	20	95.3			1	4.7				
8	Communicating with ward team	16	76.2	3	14.3	2	9.5				
9	Communicating with patients	20	95.3	1	4.7						
10	Counseling staff	18	85.8	1	4.7					2	9.5
11	Appraising staff	19	90.5			2	9.5				
12	Leading ward team	19	90.5			2	9.5				
13	Ordering ward stock	16	76.3	1	4.7	2	9.5			2	9.5
14	Checking ward stock	14	66.6	2	9.5	3	14.4			2	9.5
15	Requisitioning resources	20	95.5					1	4.7		
16	Preparing returns for hospital management	14	66.6	3	14.3	4	19.1				
17	Writing reports	17	80.9	1	4.8	1	4.8			2	9.5
18	Arranging meeting	17	80.9			1	4.7			3	14.4
Mean ± SD		84.19 ± 14.14									
<b>Educational:</b>											
1	Inducing of trained nurses.	19	90.5			2	9.5				
2	Inducing of nursing students.	16	76.2	2	9.5	3	14.3				
3	Planning the educational experience of nursing students.	12	57.1	6	28.6	3	14.3				
4	Teaching staff.	14	66.6	7	33.4						
5	Teaching patients.	13	61.6	4	19.2	4	19.2				
6	Counsel staff as appropriate.	17	80.8	4	19.2						
Mean ± SD		27.95 ± 3.45									

Table (2) shows management functions as reported by head nurses in the study sample. The table illustrates that the mean and standard deviation of head nurses' management function for managerial was (84.19 ± 14.14), and (50.0 ± 6.43) for clinical practice, while (27.95 ± 3.45) for educational. As regards to head nurses' management function of clinical practice (80.9%) for integrating the work of the ward team, at managerial (100%) for ensuring adequacy of resources, while about educational (90.5%) for inducing of trained nurses.

**Table (3): Relation between management functions and head nurses characteristics.**

Units	Management functions				X2 Test	p-value
	High		Low			
	No.	%	No.	%		
Medical	3	16.7	1	33.3	--	--
Surgical	6	33.3	0	0.0		
Casualty	2	11.1	2	66.7		
Post operative ICU	7	38.9	0	0.0		
<b>Marital status:</b>					Fisher	1.00
Single	2	11.1	0	0		
Married	16	88.9	3	100.0		
<b>Experience(years):</b>					Fisher	0.53
<10	6	33.3	0	0.0		
10+	12	66.7	3	100.0		
<b>Age(years):</b>					Fisher	0.23
<35	9	50.0	0	0.0		
35+	9	50.0	3	100.0		

(High=more 60%-Low=less than 60%)

Table (3) shows the relation between of management functions and head characteristics. The table reveals that highest percentage of management functions was (38.9%) at intensive care unit. Regarding to marital status the highest percentage was (88.9%) for married. As regards experience the highest percentage was (66.7%) for more than ten years experience and equal percent (50%) for age less and more than 35 years. There were no significant relation management functions and head nurses' characteristics.

**Table (4): Activities observed among staff nurses during six days by areas and levels**

levels	Areas							Total
	N	A	C	D	H	M	U	
<b>Patient centered</b>								
Giving care	4292	0						4292
Other direct activities	465	1						466
Exchange of information	0	275						275
Indirect care	628	19	815			76		1538
<b>Personnel centered</b>								0
personnel: other		0	4					4
<b>Unit centered</b>								
Environment		0			2			2
supplies and equipment	2	0	77	9	4	113		941
other unit activities		395	28					423
<b>Other centered</b>								
personnel							511	511
Total	5387	690	1624	9	42	189	511	8452

A Administration      C Clerical activities      M Messenger activities  
 N Nursing activities      H Housekeeping activities      U unclassified activities

Table (4) shows the total number of activities observed among staff nurses during six days by areas and levels. Table demonstrates that the highest number of activities observed was (4292) times in area of giving care for patient centered activity level, followed by (1538) times observed in area of indirect care for patient centered activity level, regarding to personnel centered activity level it was (4) for clerical skill level, as regards unit centered activity level (941) for supplies and equipment, regarding to other centered activity level (511) for unclassified skill level.

**Table (5): Duration of activities observed among staff nurses during six days by areas and levels (minutes).**

levels	Areas							Total
	N	A	C	D	H	M	U	
<b>Patient centered</b>								
Giving care	64380	0						64380
Other direct activities	6975	15						6990
Exchange of information	0	4125						4125
indirect	9420	285	12225			1140		23070
<b>Personnel centered</b>								0
personnel: other		0	60					60
<b>Unit centered</b>								
Environment		0			30			30
supplies and equipment	30	0	11655	135	600	1695		14115
other unit activities		5925	420					6345
<b>Other centered</b>								
personal							7665	7665
Total	80809	10350	24360	135	630	2835	7665	126780

A Administration      C Clerical activities      M Messenger activities  
 N Nursing activities      H Housekeeping activities      U unclassified activities

Table (5) shows the duration of activities (minutes) observed among staff nurses. Table indicate that (64380) minutes observed among staff nurses for giving care at patient centered activities, regarding to personnel centered activity level it was (60) minutes for clerical skill level, as regards unit centered activity level (14115) for supplies and equipment, while other centered activity level (7665) minutes for unclassified skill level.

**Figure (1): Observed activities performed by nurses during six days by areas**

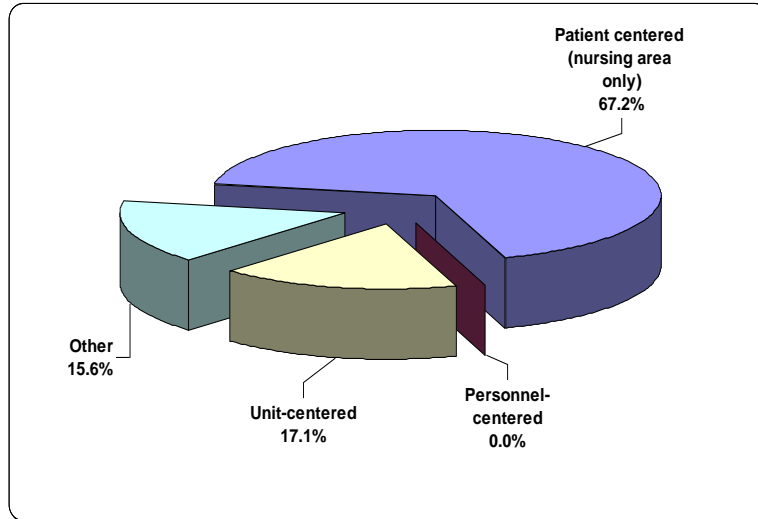


Figure (1) shows observed activities performed by nurses during six days by areas. The figure shows that the highest percentage of them (67.2%) performed at patient centered (nursing area only) activity area followed by (17.1 %) for unit centered area activity, while (0.0 %) for personal centered activity area.

Figure (2): Percentage of time spent in observed activities performed by nurses by levels.

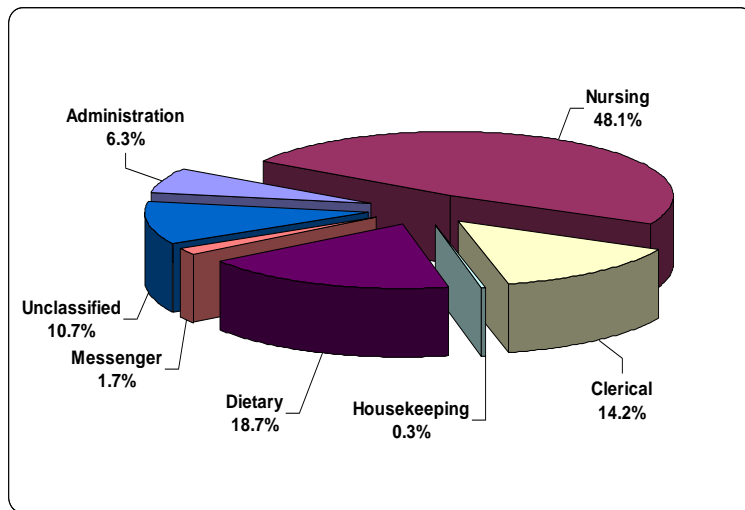


Figure (2) shows percentage of time spent in activities observed performed by nurses by levels. The figure illustrates that less than half (48.1%) of nurses time spent in nursing activity level, followed by (18.7%) in dietary activity level, while (0.4%) of nurses time spent in housekeeping activity level.

Figure (3): Percentage of time spent in observed activities performed by nurses by areas.

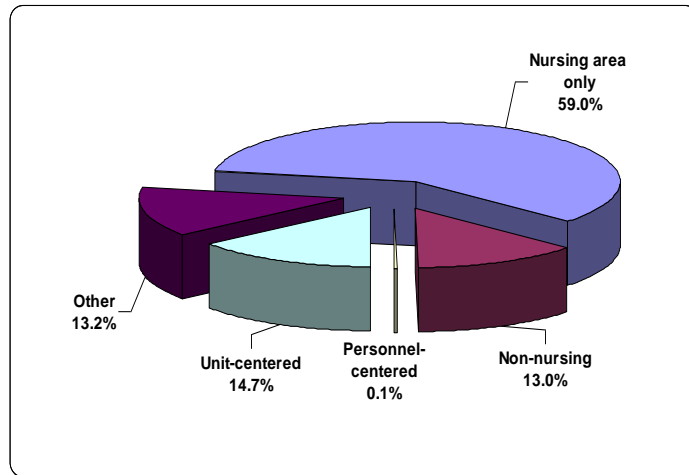


Figure (3) shows percentage of time spent in observed activities performed by nurses by areas. The figure demonstrate that more than half (59%) of nurses time spent in nursing area only, while (0.1%) of nurses time spent in personnel-centered activities. This means that the highest percentage of nurses' time spent at nursing area only.

Figure (4): Productivity of nurses in the selected units.

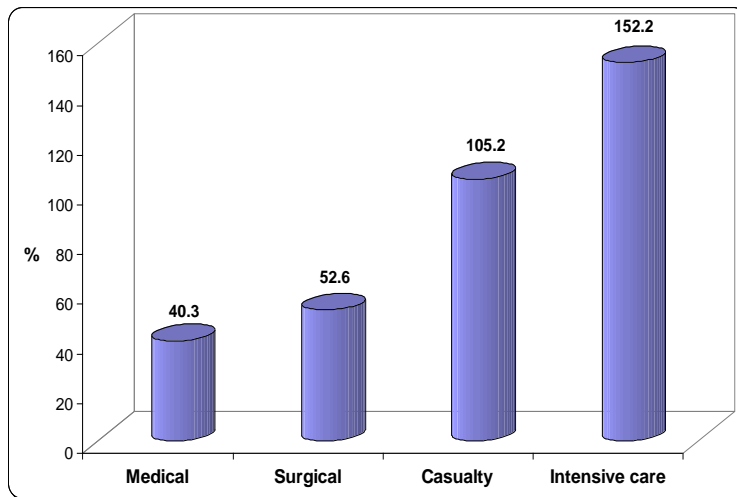


Figure (5) illustrates productivity of staff nurses. The figure shows that productivity was (152.2%) at post operative intensive care unit, while (40.3%) at medical unit .

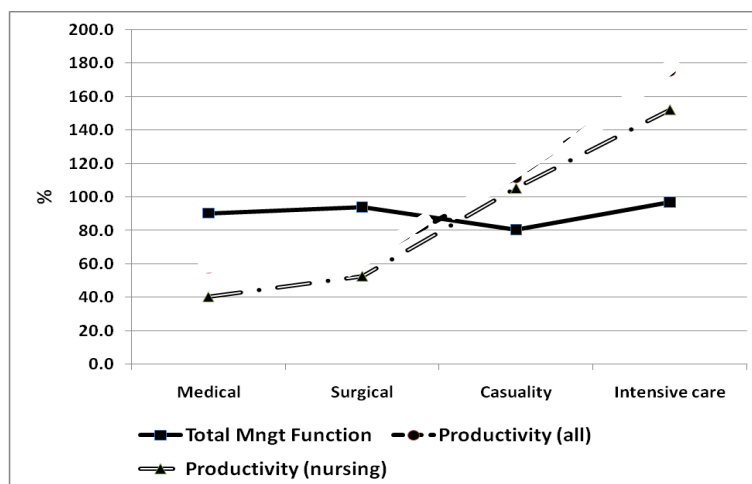


Figure (5): Relation between staff nurses' productivity and head nurses' total management functions.



In contrast, the result shows that the productivity of casualty intensive care unit (105.2%) in relation to (80%) total management functions of the head nurses, while the figure shows that (152.2%) nursing productivity at post operative intensive care unit and (100%) total management functions of the head nurses.

**Table (6): Correlations between staff nurses' productivity and head nurses' management functions.**

Patient care	Productivity
89.55	40.3
91.50	52.6
81.38	105.2
95.04	152.2
Correlation with management function	r=0.40
Administration	
89.15	40.3
100.00	52.6
76.10	105.2
98.89	152.2
Correlation with management function	r=0.00
Education	
92.50	40.3
90.57	52.6
84.18	105.2
97.14	152.2
Correlation with management function	r=0.20
Total Mngt Function	
90.40	40.3
94.02	52.6
80.53	105.2
97.04	152.2
Correlation with management function	r=0.40

Table (6) illustrates the relation between nurses' productivity and head nurses' management functions. The table shows that nursing productivity at medical unit (40.3%) in relation to (89.55%) total management functions of the head nurses. furthermore the productivity at surgical unit (52.6%) in relation to (95%) total management functions of the head nurses.

In contrast, the result shows that the productivity of casualty intensive care unit (105.2%) in relation to (80%) total management functions of the head nurses, while the figure shows that (152.2%) nursing productivity at coronary intensive care unit and (100%) total management functions of the head nurses

## V. Discussion

Head nurses' roles are the front line fire-fighting service of the nursing care. It is the most challenging nursing role that needs a detailed description of the tasks involved in the job (Walsh, and Kent, 2005). Head nurse has three main areas that constitute her role. These are: patient care management to ensure that patient total needs are met, staff management to utilize, guide, evaluate, and correct staff nurses in their nursing practice, as well as unit management to ensure its smooth running to fulfill hospital goals (Baddar et al, 2003).

The present study findings reveal that most of head nurses and more than half of nurses their ages more than thirty years old. (Table 1); accordingly they have long years of experience. Also the findings show that the mean years of experience was fifteen years for head nurses compared to thirteen years for nurses. These years of experience mature them with clinical experience, and ability to lead, integrity to grow and foster advancement and adjustment with others.

The current study findings are consistent with results reported by the American Association critical care nurses (AANC) (2007) which illustrated that about half of nurses had ten or more years of experience as ICU, about two quarters of them having a Bachelors degree. In addition, the current study findings are inconsistent with Bhagwanjee, et al., (2008) study of the audit of critical care resources which reported that more than one quarter of nurses have less than one year to five years of experience.

These study findings showed that the majority of the sample was female nurses, and male nurses constitute small portion of nursing manpower force. Nursing was perceived as a female profession, which reflects the fact that female nurses in Egypt are predominant and male nurses are new comers to the nursing profession. However the situation is now changing because of limited job opportunities in the market, shortage of nurses, and motivated male to enroll in the bachelor program, adding to the factors of public view to nurses started to be positive.

This study results indicated that the majority of staff nurses are having diploma in nursing, while the majority of head nurses are having bachelor in nursing (Table 1). This finding reflects the fact that large numbers of diploma school nurses are graduated yearly compared to associate degree and other nursing degrees. Most of these nurses were compulsory assigned to the hospital for two years by the Ministry of Health; however few are directly to the hospital.

The current study findings are consistent with Mustafa et al, (2007) study of job description for head nurses in surgical units which found that head nurses' age ranged between 28 and 37 years old, eight were married. Six had Bachelor degree and four had secondary nursing diploma. Only two had less than 10 years of experience, four had 10-15 years of experience.

The current study findings (table 2) show that the mean of head nurses' management function as reported by head nurses for managerial function was  $(84.19 \pm 14.14)$ , while  $(27.95 \pm 3.45)$  for educational function (table 2), because the main focus of head nurse activities should be concentrated on managerial work more than clinical and educational.

The current results consistent with the opinion of the study was done by Mostafa et al, (2007) about job description of head nurses which clarified that head nurse 'functions of clinical practice function (100%) for the statement review the nursing care plan, at managerial function (100%) for the statement determine needed equipment and supplies, apply policy, while for staff management (100%) for time schedule. Patient management is the third priority of the expected job of head nurses' in surgical units. This area of duties include encouraging them to work as a team, proper use of supplies, supervising and evaluating staff performance.

Meanwhile, the present study findings opposed with Marriner (2006) who approved the importance of staff management as one of duties and responsibilities of the head nurses. Moreover, Fox et al (2004) approved that interviewing, counseling and resolving conflicts of the staff nurses are the second priority ranking of duties of head nurse.

Connecticut nurses 'association (2006) indicated that clinical practice fell toward the bottom of the ranking scale in the actual use of head nurse's time. Furthermore, this finding was more prominent among those working on medical-surgical than intensive care units. Moreover, Lewins (2008) stated that the hospital has to go to basics; standards of care, job description, close supervision, and punishment/reward system to diminish the time wasted.

In relation to observation time spent for each area and level of activities of the nurses units, tables (4, 5) indicate that (64380) minutes observed among staff nurses at patient centered activities, regarding personnel centered activity level it was (60) minutes for clerical skill level. This is means that nurses spent most of their time on patient centered activities.

Figures (1 to 3) shows that the highest percentage of activities (48.1%) observed among staff nurses at nursing level activity, while (0.3%) for housekeeping activity level. The highest percentage of activities (67.2%) observed among staff nurses at patient centered (nursing area only) activity area, while (0.0 %) for personal centered activity area. From researcher point of view, the main role of nurse concentrated on patient centered activities, direct patient care (nursing area only).

The current study findings are consistent with results reported by Gabber (1998) measuring the actual performance of nursing care and patient satisfaction as means of monitoring quality, that indicated higher proportion of time spent by personnel on miscellaneous activity was utilized on standby duties mainly waiting doctors and initiation of medical round. The findings revealed wide variation between time utilized on nursing activities by all categories of nursing personnel and the time devoted by them to non nursing activities. It was evident that, time spent on patient centered was limited compared to time wasted on resting, eating and taking.

In contrast, Lewis (2008) reported that ten percent of nursing personnel time was spent in reading, drinking tea, or not visibly engaging in an apparent task. Furthermore, Gabber (1998) results contradict with the current study results. Gabber (1998) results showed that nurses spent 27.88% of their time regarding to other direct activities on medical unit, surgical unit. This means that nurses spent most of their time on areas not related to other direct activities such as clerical and messenger activities.

The current study results in accordance with a study done by Williams et al (2009) about quantitative analysis of nursing activity, which revealed that a total of 8883 nursing activities were observed and recorded as follows: (46%) direct patient care, (25%) indirect patient care, (10%) unit related and (19%) personal time.

This in consistent with another study done by Harrison and Nixon (2006): Nursing activity in general intensive care, the study revealed that (85%) direct patient care and up to 6% of time was spent undertaking

non-nursing activities, (21%) managerial and administrative activities, this reduce the amount of time spent in direct care.

This is consistent with a study done by Norrie (1997): nurses' time management in intensive care, which reported that nurses spent (85%) of their time in four categories of activities (direct patient care 24%, clerical 17%, patient assessment 38% and time out, patient focused activity (6%).

The current study results opposed with Bassler and Goedde (1993) who studied how the nurses reduce their clerical time and time improving unit operation. The authors identified and reassign clerical activities on two special units. The results of the study showed that nurses spent 30 hours /week in "clerical activities". The study concluded that the nurse manager spends more time in clerical tasks than other activities

Linden and English (1994) found that nurses spent 27.5% of their time in direct care, 41.8% in indirect care, 15% in unit related activities and 15.7% in personal time. Hendrickson et al., (1999) used work sampling technique to assess time allocation to various activity of the staff nurse. Results indicated that 31% of nursing time was spent in direct care, 45% in indirect care and 10% in unit related activities, 13% in personal time, 1% in unknown.

Regarding nursing productivity, the present study revealed that the highest percentage of productivity was observed at post operative intensive care unit, while the lowest percentage at medical department, figure (4).

The current study results are consistent with O'Brien-Palls, et al, (2004) study of evidence- based standards for measuring nurse staffing and performance at hospital which reported a target of eighty five percent unit productivity on a daily basis. Productivity less than that will results poor quality and higher costs.

Nationally in Egypt, a study conducted by Aref (2000) in El-minya University hospital to measure the level of productivity of staff nurses working in surgical units (general and private) revealed that level of performance in general surgical unit was 55.7%, and in private surgical units was 61.6%. Finally Aref (2000) described the level of performance and productivity of staff nurses as low.

Figure (5) illustrates the relation between nurses' productivity and head nurses' management functions. In general, the results indicate that there were wide variations between nursing productivity and total management functions of the head nurse. This means that no significant relation between nursing productivity and total management functions of the head nurse.

In a study conducted by Richard et al (1999) to measure the performance of first-line management functions on productivity of hospital personnel the results contradict the current study results. The authors calculated productivity by dividing total patient hours by total unit personnel hours, and reported that small amount of time spent by first-line managers in research activities (2.7%) was not helpful to unit productivity. Time spent in operations (21.2%), clinical practice (5.7%) and others (14.8%) were correlated positively with productivity.

## **VI. Conclusions**

**The following conclusions can be drawn:**

- The mean of head nurses' management function for managerial was  $(84.19 \pm 14.14)$ , and  $(50.0 \pm 6.43)$  for clinical practice, while  $(27.95 \pm 3.45)$  for educational
- Regarding time spent by the nurse in the area and level less than half (48.1%) of nurses time spent in nursing activity level, while (0.4%) of nurses time spent in housekeeping activity level
- Regarding nursing productivity were (40.3%, 52.6%, 105.2%, 152.2%) at medical units, surgical unit, casualty intensive care unit, coronary CCU respectively
- There is relation between head nurses' management functions and nursing productivity at medical, surgical, post operative, causality ICUs.

## **VII. Recommendations**

- 1- Conducting continuing education programs (training courses) for nurse manager about: management functions (clinical, managerial, professional skills) and how it can be used to empower subordinates to increase productivity.
- 2- Providing training program for nurses to improve performance, decrease waste time, and increase patient care time.
- 3- Orientation programs for new head nurses should include orientation about job description of their duties to improve quality of care, and periodic revision must be done to keep them up-to date with current changes.
- 4- Productivity should be periodically measured to monitor the performance of nurses and head nurses should train nurses to improve their skills.
- 5- The head nurse should set nursing care standard , evaluate nursing care, organize resources, plan the educational experience of nursing students, council staff as appropriate.

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