

## A TIME AND MOTION STUDY ON THE ACTIVITIES OF THE STAFF NURSES AND HEALTH CENTRE AUXILIARIES OF A SECONDARY HOSPITAL IN VELLORE DISTRICT

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### ABSTRACT

A time motion study was undertaken to study the activities of the Staff Nurses and the Health Centre Auxiliaries in a secondary hospital who were observed for 46.5 hours and 32.5 hours respectively during their day shift work. The staff nurses spent 68.81% of their time in direct patient care related activities. The Health Centre Auxiliaries spent 59.3% of their time in unit related activities. Staff nurses spent significant proportion of their time 11.12% of their time in non clinical activities, whereas the Health Centre Auxiliaries spent 7.3% of their time in non clinical activities. The staff nurses were spending 17.6% of their in documentation, admission procedure 13.9% and administration of medications 13.9%. Staff Nurses spent only 10.82% of their time in assessing the patients. Out of the total working hours 12.92% of the time spent by the Health Centre Auxiliaries was unproductive.

**Key Words:** Time motion study, Health centre auxiliaries, Clinical activities.

### INTRODUCTION

Quality health care is a right of every citizen in a country. Qualified and motivated human resources are essential for providing adequate health services, but human resource shortages have now reached critical levels in many hospitals especially in resource limited rural health care settings [1]. Health care providers today face increasing pressure from many directions. They must improve patient care, despite persistent nursing staff shortage. At approximately 30% of the total hospital staff. Nurses represent the largest constituent employee population in any hospital. They are the primary caregivers and are the common thread connecting patients to everything that touches them during their hospital stay, coordinating patient care is a vital role of nursing staff. Policy makers are challenged to maximize productivity/utilization and minimize staffing costs, while

ensuring the quality of care. When faced with insufficient time, nurses generally omitted nursing interventions. The most frequently omitted interventions included care planning (48.2 %), comforting/talking (38.6 %), back/skin care (31.4 %), oral hygiene (28.7 %), patient/family teaching (23.3 %), and documentation (22.6 %) [2]. Next to nurses, nursing assistants play an important role as part of the healthcare team by providing direct patient care and emotional and physical support for patients. It is equally important to appraise the performance of nursing assistants frequently. Improving patient outcomes are goals of healthcare and hence understanding what factors influence performance of the health care professionals is pivotal. Quality improvement is as important in a small rural health care facility as it is in larger urban center. The interrelationship of the rural hospitals challenges suggests the need for clear vision and a comprehensive set of



strategic initiatives. One strategy to improve clinical outcomes is by improving the work efficiency of health care workers. Time motion studies will catalyze hospitals to make profound changes in the staffing pattern and work assignments which are necessary in the new consumer driven era [3]. Time and motion study is a major part of scientific management developed in the direction of establishing standard times, while motion studies enable to improve the work methods. A study conducted in New Jersey, studied patient care staffing pattern and found that majority of hospitals used non nursing personnel as a predominant patient care staff [4]. Health care personnel typically get regular formal performance feedback in the form of employee performance appraisals. Peer reviews can be powerful because it comes from those who work closest with them. Competency assessments evaluate the selected skills. These can be ideal way to identify areas for development in nursing personnel. Each of this feedback mechanism can give insights into the performance strengths and areas need further development. Combining them gives a much better, overall view of performance [5]. Time and motion studies related to Health care personnel are scarce. Hence we find it is the need of the hour, to undertake research endeavors which study the work performance of nursing personnel scientifically. Moreover, the findings of this study have important implications in improving the quality of patient care directly and indirectly.

#### **AIMS OF THE STUDY**

To determine the type of activities done by the Staff Nurses and Health Centre Auxiliaries during their working hours and the quantum of time spent on each of those activities.

To determine the amount of time spent by the Staff Nurses and Health Centre Auxiliaries in specific areas of the secondary hospital.

#### **MATERIALS AND METHODS**

##### **Design and sampling**

A time motion study design was used. The study was conducted at a 75 bedded secondary level hospital of a rural area. The staff nurses and the Health Centre Auxiliaries of the secondary hospital constituted the population. Simple random sampling technique for the staff nurses and enumerative sampling technique for Health Centre Auxiliaries were used. Data was collected by non participatory observation method from seven staff nurses and five Health Centre Auxiliaries over 46.5 and 32.5 hours of observation respectively.

##### **Inclusion criteria**

The activities of the staff nurses and the Health Centre Auxiliaries during day shift.

##### **Data collection instrument**

An observation record was used which had provisions to enter the details regarding the list of activities carried out by the staff nurses and the Health Centre Auxiliaries, time taken to complete the task and location of staff nurses and health centre auxiliaries while performing a specific activity.

##### **Data collection procedure**

Two investigators separately observed seven staff nurses and five health centre auxiliaries respectively for five days who were on day duty from 7.30 am to 4.00 pm. Among the study subjects one staff nurse and one health centre auxiliary were doing a half a duty from 7.30 am to 12.30 pm. So the staff nurses were observed for 46.5 hours totally and the health centre auxiliaries were observed for 32.5 hours using non participatory observation method. The investigators made a record of all the activities and the location of the staff nurses and health centre auxiliaries during their work hours excluding their one hour break time. These details were recorded in the observation record.

#### **RESULTS**

Majority of the staff nurses 71.42 % were in the age group less than 25 years. All the Health Centre Auxiliaries were above 25 years of age.

The figure 1. Shows that staff nurses spent most of their time (68.81%) in patient care related activities whereas the Health Centre Auxiliaries spent most of their time 59.3% in unit related activities. We find the HCA's had most unproductive hours 12.92% but Staff Nurses wasted only 1.1 % of their working hours.

Table 1 reveals that staff nurses mostly spent their time 17.6% in documentation. They spent only 10.82 % of their time for assessing the patients. The time spent for admission procedures and administration of drugs by the staff nurses comprised of 13.9 % each. They also spent 9.1 % of their time in doing wound dressing for the patients.

Table 2 illustrates that Health Centre Auxiliaries spent 12.42 % of their time in arranging the trolleys and unit. Most of their time 47.9 % was spent in doing sterilization procedures. They assisted the staff nurses by spending 5.46 % of their time during their working hours.

Nurses spent most of their time 71.5 % in patient unit. Whereas the HCA's spent most of their time in sterilization room 46% and treatment room 10.1 % ( Figure 2)



**Table 1. Time spent by the Staff Nurses on specific activities**

Sl. No	Specific activities of the Staff Nurses	Time spent (in minutes)	%
1.	Attending morning prayer	180	6.6
2.	Reporting	120	4.4
3.	Assessment of patient	295	10.82
4.	Administration of drugs	380	13.9
5.	Dressing	250	9.1
6.	Attending medical rounds	72	2.6
7.	Assisting in procedures	180	6.6
8.	Documentation	480	17.6
9.	Admission procedure	380	13.9
10.	Maintaining I/O chart	20	0.7
11.	Nebulization	140	5.13
11.	Urinary catheterization	30	1.1
12.	Baby care	40	1.4
13.	Others	149	5.5

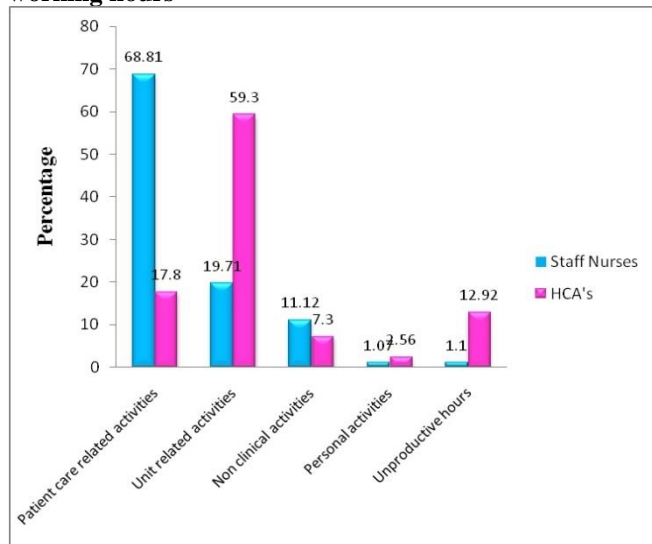
Note: The total time was 46.5 hours

**Table 2. Time spent by the Health Centre Auxiliaries on specific activities.**

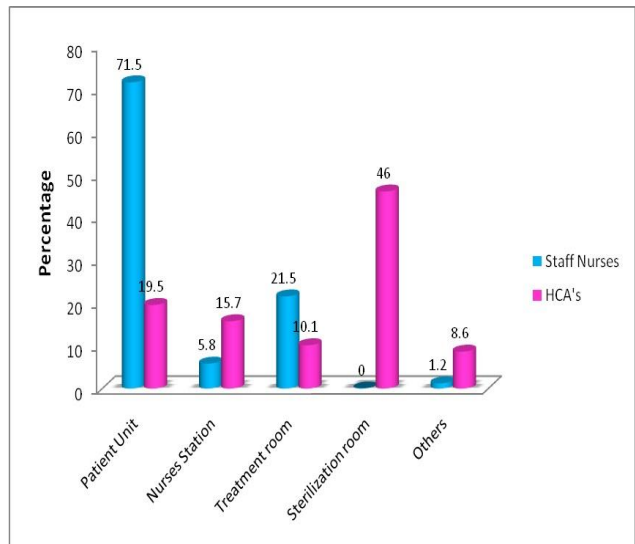
Sl. No	Specific activities of the HCA's	Time spent (in minutes)	%
1.	Attending morning prayer	120	7.28
2.	Reporting	60	3.64
2.	Bed making	85	5.15
3.	Checking TPR	40	2.42
4.	Arrangement of trolleys and unit	205	12.42
5.	Assisting the staff nurses in doing procedures	90	5.46
6.	Directly doing procedures to patients	90	5.46
7.	Sterilization procedures	790	47.9
8.	Collection of things	85	5.2
9.	Others	73	4.5

Note: The total time was 32.5 hours.

**Fig 1. Time spent by the staff nurses and the health centre auxiliaries on various activities during their working hours**



**Fig 2. Location of the Staff Nurses and Health Centre Auxiliaries during their working hours**



## DISCUSSION

In the present study, most of the staff nurses (100%) and health centre auxiliaries (80%) were females. This is because traditionally nursing is a female dominated profession. And more over 71.42 % of the staff nurses were in age group of less than 25 years, whereas all the Health Centre Auxiliaries were above 25 years. Moreover, 71.42 % of the Staff Nurses had less than one year of experience but all the HCA's (100%) in the present study had more than one year of experience in their discipline.

Major proportion of the time of the staff nurses 68.81 % was spent in doing patient related activities. Nurses also spent a significant proportion 19.71 % of their time in doing the unit related activities like arranging the trolleys in the treatment room, arranging the unit, checking the emergency trolley, taking inventory etc. Non clinical activities of the staff nurses like billing, getting signatures from the doctors to complete the formalities, clerical work, taking the patient charts to medical records department, entering the patient details in admission and discharge registers, collecting things for patient care if needed from different areas comprised 11.12 % of their working hours. But the study conducted in a western country reported that non nursing tasks occupied only 9 % of the total working hours of the nurses. Another Canadian study posited that nurses continue to perform tasks that could be delegated to non nursing personnel including ancillary services 83.5%, housekeeping 55.1% and delivering trays 55.1% [6]. The amount of time spent on non nursing task is important because this time is not spent on patient monitoring. Nurses must maintain a situation awareness of a patient's health status. But to do so nurses should monitor patient overtime through direct (physical assessment) and indirect (charting, reviewing lab results) care processes [7-9]. Only 1.1 % of their time was unproductive, chatting with their colleagues.

The Health Centre Auxiliaries were involved most of their time 59.3 % in doing unit related functions like patient unit cleanliness, arrangement of treatment room, dressing trolley, autoclaving articles for different procedures etc. Patient care related activities like bed making, TPR checking, minor wound dressing, simple health education comprised 17.8 % of their working hours. These findings could be attributed to the job description of the Health Centre Auxiliaries who are actually expected to do more of unit related functions than direct patient care related activities. When compared to the staff nurses the Health Centre Auxiliaries it was evident that they waste 12.92 % of their working hours by chatting with their colleagues, resting in the sterilization room, treatment room and taking extra break time. These findings signal the need to have intensive supervision over these HCA's and plan strategies for the maximum utilization of the Health Centre Auxiliaries during their working hours

thereby improve their work performance. These findings were coinciding with the statement that the costs of waste for frontline health care workers activities were substantial [10]. A study which was conducted in Riyadh among hospital nurses found that job satisfaction and organizational commitment were strong predictors of nurse's work performance [1]. Hence a similar study can be conducted to identify the factors affecting the performance of these Health Centre Auxiliaries.

On analysis of the time taken for the specific activities of the Staff Nurses, it was observed that they spent a significant proportion of their time 17.6 % in documenting the patient care. These findings are supported by Hendrich and Chow who found that major portion of the time spent for indirect patient care by the nurses was engaged in documentation. The next major part of their productive work time 13.9 % is spent on admission procedures and administration of drugs. They spent only 10.82 % of their time for assessing the conditions of the inpatients. These findings are contrast with the study conducted in a intensive care unit which stated that nurses spent 52 % of their time in assimilating information in clinical information system and 15 % on monitoring the live vitals of the ICU patients. The discrepancy in the present study is therefore because of the difference in the health care settings where the studies were done and also there will be a difference in the type of patient care given in a ICU setting when compared to the patient care that is given in a resource poor rural health care setting. Another common observation was that the staff nurses spent 9.1 % of their productive work time in doing wound dressing. Moreover, 6.6 % of their time was spent for assisting various procedures to the doctors in the clinicals. Other activities like billing, getting signatures from the doctors to complete the formalities, entering patient details in the registers etc occupied 5.5 % of their productive time.

When the specific activities of the Health Centre Auxiliaries were analyzed it revealed that they spent 5.15 %, 2.42 % of their time for bed making and TPR checking respectively. Major chunk of their productive time 47.9% was involved in doing sterilization procedures. Arranging the trolleys and unit, comprised 12.42 % of their work time.

It was observed that staff nurses spent most of the time in patient unit 71.5%, in nurse's station they spent 5.8%, few activities in the treatment room occupied 21.5% of the staff nurses time. They spent 1.2% of their time in pharmacy, billing section. The Health Center Auxiliaries spent 19.5% of their time in patient unit, and in the nurses' station they spent 15.7%. Major proportion of the time 46 % was spent in sterilization room and in other areas which included store room, medical records department, pharmacy and immunization room they



spent 4.5 % of their working time. In one study conducted in abroad nurses travelled between two locations, patient rooms, medication rooms, nursesstation, pantries, lounge and elevators a mean of 13 times per hour, performing a mean of 1.9 activities at each location [11].

#### LIMITATIONS OF THE STUDY

1. Since this is a observational study there is a possibility for observer bias
2. Staff nurses and the health centre auxiliaries who were doing day shift alone were included in the study considering the feasibility of the study. Patient care activities will vary in different shifts.
3. Work culture of the organization have a major impact on the study results

#### NURSING IMPLICATIONS

Addressing human resource concerns pose new challenges for nurse managers. Time and motion studies on health care providers especially on nurses and nursing assistants helps in establishing standard times for patient care related procedures, improve work methods and upgrading of work systems. It also helps to build on the best elements of work flows and create a standardized best nursing practice. Nurses can undertake in depth studies to identify the key factors which influence the work performance of the nurses and nursing assistants. Moreover, many studies which investigate the work efficiency of the nurses especially in resource poor settings are not conclusive of the causal relationship because of various confounders. Nurse Managers should equip themselves to adopt various research strategies to study the competencies of the subordinates and determine their time management skills so as to improve their work

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performance. This will indeed contribute for better patient outcomes and facilitate evidence based practice even in the quarters of nursing administration in various health care settings.

#### CONCLUSION

Health care leaders, policy makers and health service researchers have been unsuccessfully seeking the methods to improve the work output of various health care personnel. None of the change programs used so far, eg. Total quality management, continuous quality improvement, quality circles, and pay for performance has been shown to successfully utilize the available health manpower. Frontline caregivers like the nurses and the nursing aids are responsible for the quality and safety of care delivery; increased attention to and support for the effectiveness of their activities is a requisite for sustainable health system improvement.

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#### CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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#### ETHICAL CLEARANCE

Permission was sought from the concerned authorities of the College of Nursing, CMC, Vellore before conducting the study.

