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How to Allocate the Nursing Manpower in the Selected Hospitals, Affiliated with Tehran University of Medical Sciences, 2011

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ABSTRACT

Nursing manpower plays an important role in care quality and health promotion. So any health care organization without an efficient nursing unit is not expected to survive for a long time. This study was conducted to estimate the number of the necessary nursing manpower for the selected hospitals according to the proposed model by the Iran ministry of health.This research is a cross wardal study accomplished in the selected hospitals of Tehran university of medical sciences (Imam Khomeini and Shariati hospitals) in 2011. Data collection was performed through forms filled in different wards of the mentioned hospitals and the cure assistant office of the university.Based on the findings, in 5 out of 11 wards of Imam Khomeini hospital, and in 13 out of 16 wards of Shariati hospital, number of the nursing personnel was reported lower that the standards. Also, in 6 and 3 wards of Imam Khomeini and Shariati hospitals, respectively, nursing manpower exceeds the proposed standards. In total, Imam Khomeini and Shariati hospitals suffer 63 and 393 nursing manpower shortages in compare to the proposed standards, respectively. According to the results of this study, status of nursing manpower in the studied hospitals both in terms of number and composition is not in accordance with the proposed standards. In order to facilitate and improve the quality of the provided services in each hospital, it is essential to know the required number of nursing manpower. Consequently, utilizing sufficient nursing manpower is the basic and primary step for efficient and effective planning.

Key words*:* Nursing manpower, Ministry of health and Medical education standard, Hospital

INTRODUCTION

In the past, the word of workforce was proposed for the staff within an organization. However, today, the term "human resources" is usually replaced for the working staff, who are skilled and well-educated workers that dedicate their professional knowledge to manage other resources to provide good services

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(1). Human resources in organizations should be considered as one of the main units, with high amount of attentions paid for them. Tools and machines can always be prepared, but capable human resources can rarely be prepared with ease (2), making them the most important developmental factor in all the organizations and countries and one of the most crucial components of health care services (3 and 4). Also, in hospital systems, human resources are considered as one of the most important elements and their shortage or excessiveness can result in reducing the quality of patient care (5). Hence, supplying human resources in a hospital includes regular and logical actions that aim to determine the required number and composition of human resources in order to provide standard cares (6). Most of hospitals problems arise from the lack or inappropriate distribution of manpower staff. An important part of the hospital's human resources are nurses. Nursing productivity is of extraordinary significances, due to the fact that nurses have crucial role in promoting high quality health care that compose a large number of hospital resources. (62% of staff and 36% of hospital costs) (7). Offering high quality and productivity health care, requires adequate number of trained nurses and technicians. It is reported in several studies that nursing shortage can be a major obstacle in efficiency and quality of hospital care (7, 8). Accordingly, in order to establish the effective factors in hospitals, it is crucial to develop organizational standards and human resources, especially the number of nursing manpower for certain types of hospitals (state, non-governmental, educational and non-educational). The development of hospitals should be based on the correct criteria and indicators selection, applying these standards, timely using skilled managers, and appropriate use of human resources that can improve their performance. One of the new models to estimate the human resources in hospital departments was proposed by the ministry of health and medical education, allocating the structural resources in the context of service in the Fourth Five-Year Plan (2007-2014). This pattern seems to be more accurate in estimating the human resources in compare to the former standards of health department, according to the ergo meter and timing of the various hospital departments. This approach is based on the timing and availability of service shift planning in every part of the hospital. In this approach, human efforts are calculated independently for each department, including the inpatient units, labs, clinical support and other related sectors like the operating room. Consequently, index obtained based on this approach can be assigned to each hospital. Meaning that an index can be changed as a function of the bed types, occupancy rate, bed numbers and hospital physical space. For example, a hospital with 100 beds will possibly has a different indexes of human resources in compare to a hospital with 500 beds. Even two hospitals with the same number of beds, but with different combinations and types of beds can have different coefficients in determining the indexes. In this approach, instead of expanding the fixed index from top to bottom (i.e. attributing a fixed state index like 1.73 to bed and expanding it to hospital) tries to expand the index from bottom to top. In other words, the state index is obtained by summation of all environmental parameters (9). Consequently, the present study aims to determine the status of the required nursing manpower in hospitals to conform with the proposed models. This study also determines staff shortage or excessiveness in different units, urging managers of the hospitals to compensate the existing shortcomings of evidenced-based personnel in different ways. Reorganization of human resources, reviewing the job description, using multiple personnel staff and using recruited and trained staff are some of the possible ways.

MATERIALS AND METHODS

Present study is a descriptive cross-wardal study that has been conducted in Imam Khomeini and Shariati educational hospitals, affiliated with Tehran university of Medical Sciences, in 1390. The population under study was selected from clinical and emergency departments of the mentioned hospitals. Data was collected through special forms designed on the basis of previous studies and the suggestions made by teachers.In this study, three types of data forms were used: Form No. 1 is attributed to the clinical department staff, that was prepared through the working situation. Form No. 2 is related to the medical records used for determining bed occupancy rate (BOR) in units, including number of beds and the average length of stay for patients in clinical parts. Form No. 3 was designated to assess the staff and

personnel structure of the hospital and was completed by the human resources officer in the hospital. Then, according to the personal standards of ministry of health and medical education, manpower shortage and surplus status in different parts of the hospital was assessed. Consequently, shortages and surpluses of different parts can be computed independently for each hospital. Data was analyzed using Excel, leprosy and guide staff standards at the ministry of health and medical education.

RESULTS

Imam Khomeini hospitals have 537 active beds and an average of 78% BOR, while Shariati educational hospitals have 517 active beds and average of 78% BOR. According to the health ministry standard, 6 out of 11 studied wards in Imam Khomeini hospital were facing residual nursing manpower while the rest were facing shortage of nurse manpower. According to the fourth proposed model, wards had excessive nursing manpower, in which one part of it was consistent with the model, and the rest had nursing manpower shortage. In accordance with standards of the department of health, the greatest shortage and excess were in CCU (people 32) and Cardiac Surgery ward (14 people), respectively. The lowest deficit was in Gastroenterology ward and Nursing Office (2 people) and the lowest surplus was in lungs ward (1people). Based on the proposed model, the greatest shortage was in the Orthopedic department (n=10) and the lowest shortage was in the Nursing Office, which was consistent with the pattern. The highest surplus was in the Internal ward (n=8) and the lowest surplus was in the general surgery ward (n=1). Totally, the difference between present situation of 11 parts and the standards of health ministry was 63 people, however, the same difference between present situation and the pattern was computed as 30 (Table 1).

Table1: Distribution of nurses in the hospital sand its distance with the standards (Emam Khomeini)

ward	**Bed occupancy rate**	**Number of beds**	**Existing nurse**	**Nurse in accordance with the Standard model**	**Nurse in accordance with the proposed model**	**required Personnel in accordance with the Standard model**	**required Personnel in accordance with the proposed model**
Kidney Surgery	76.2	18	24	13	17	-11	-7
Orthopedics	76.2	42	28	31	38	4	10
Internal	98.2	24	21	11	13	-10	-8
Gastroenterology	94.8	27	18	20	22	3	4
Infectious	75.8	27	43	38	42	-5	1
Lung unit	94.8	18	14	13	15	-1	1
CCU	65.9	23	35	67	41	32	6
ICU	73.2	18	49	73	57	24	8
General surgery	84.1	66	60	48	59	-12	-1
Cardiac Surgery	87.1	40	43	29	36	-14	-7
Nursing Office	-	-	11	13	11	2	0
total		303	346	356	351	63	30

On the basis of the standards of health ministry, only 3 wards among 16 wards of Shariati hospital had excess nursing force and the rest were faced with shortage. According to the proposed model, 4 departments faced residual nursing manpower and the rest suffered shortage of the nursing manpower.

According to the standards, the highest shortage was reported in ICU(64 people) while, the lowest shortage was in the Orthopedics ward (1 people). On the basis of the proposed model, the highest shortage was reported in ICU (36 people) and the lowest shortage was observed in the infants ward (n=1). Consequently, the difference between present situation of 16 parts and the standards of health ministry was 393 people, while, the difference between present situation and the pattern was 139 (Table 2).

Table2: Distribution of nurses in the hospital sand its distance with the standards (Shariati)

ward	**Bed occupancy rate**	**Number of beds**	**Existing nurse**	**Nurse in accordance with the Standard model**	**Nurse in accordance with the proposed model**	**required Personnel in accordance with the Standard model**	**required Personnel in accordance with the proposed model**
CCU	75.1	15	12	61	22	49	10
ICU	76.8	31	61	125	97	64	36
NICU	82.2	6	15	24	20	9	5
Neonatal unit	12.5	8	9	24	10	15	1
Orthopedics	60.7	36	25	26	33	1	8
Neurology	79.4	17	20	29	36	9	16
General surgery	71.4	40	20	29	36	9	16
Emergency	80.8	33	45	101	52	56	7
Kidney Surgery	59.4	7	10	28	12	18	2
Lung unit	68.7	30	20	22	44	24	4
BMT	85.3	34	63	137	74	18	-9
Neurosurgery	73.7	24	15	18	33	3	8
hematologic	94.6	24	34	18	30	-16	-4
Gynecological	81.3	44	17	135	44	118	26
Post CCU	80.5	7	7	4	5	-3	-2
Nursing Office	-		19	13	11	-2-6	-7
total		356	392	794	549	393	132

DISCUSSION

In the present study the number and combination of nursing staff in the selected hospitals in Tehran university of medical sciences on the current situation was determined. In order to identify deficiencies or surpluses in the nursing manpower in various wards, a comparison between the standards of the ministry of health (in the form of structural resource allocation of hospital services during the fourth Five-Year plan 2007-2014) was conducted. Knowing the fact that there are limited reported similar studies in the literature to determine the status of the nursing staff in connection with the referenced standards, it was feasible to compare the results of this study to only a limited extent of references. So study of the nursing staff in the critical departments such as ICU and emergency departments was performed. Consequently, the studied hospitals with 1054 beds and 738 nursing staff suffered shortage of 456 people in compare to the health ministry standards. With a targeted and rational approach, high amount of these shortages can

be compensated by utilizing licensed and assistant employees; also whenever it is necessary, licensed vocational nurses (RN) can be employed. In a study in the private hospitals with less than 100 beds by *Akbari et al.* nearly optimal nursing manpower was estimated in the present situation. They proposed that utilizing licensed healthcare workers and assistants can be more effective in compare to the vocational nurses (10). *Dehghan Nayeri, et al.* conducted a study in a qualitative way, and reported the lack of direct professional nursing for assigned care and non-nursing tasks or works in other categories as the main obstacles of the productivity (11). In the study of *Eastaugh,* the hospitals that merely applied licensed nurse staffs showed the weakest performance. Also, recruiting health workers can reduce redundant work and make nursing professionals focus on patient care activities (12). One of the departments in which the nurses have an important administrative role are the intensive care units. Scientific background and knowledge are perceived to be one of the main characteristics of the staff in the intensive care units and nurses who are not eligible should not be employed (13). In the studied hospitals, a severe shortage of nursing manpower was observed in ICUs and NICUs, in where intensive care must be provided. According to the *Dehghan Nayeri, et al.,* nursing manpower shortage can increase nursing errors (14). Also, the nursing manpower shortage can decrease the productivity and quality of care and patient satisfaction (15, 16). Simultaneously, emergency department is one of the units in which nursing shortage can affect other hospital services(3). The quality of hospital care in the emergency departments is very important and the evaluation of other parts of the hospital depends on the emergency department to obtain the necessary extent (17). So, qualified and experienced personnel should be utilized in the emergency departments, in order to give priority to the safety of patients life in the shortest time (18). *Rahmani, et al.* conducted a research in Tehran university of medical sciences affiliated hospitals and deduced that most of the emergency departments are in relatively good condition, in terms of management, operations, space, facilities and equipment. However, they had undesirable condition in terms of the nursing man power, processes, training and instruction (19). Also a comprehensive study in Babol university of medical sciences showed that emergency departments of all studied hospitals face nursing manpower shortages (20). So it should be noted that the hospital emergency department which is known as a key part of the development, must be in accordance with other wards, with a minimum stay of patients in the emergency rule. Recent studies have shown an inverse relationship between the level of absorption and the utilization of nurses and patients staying there (21).

According to a research conducted in Shahid Beheshti university, it is recommended that the needed nursing manpower be utilized according to the number of occupied beds; so in the parts with BOR more than 70 percent, the nursing manpower rates should be multiplied by the number of beds and the number of BOR. In case that the bed occupancy rate exceeds 70%, the number of required nursing manpower is calculated as a function of the number of beds in the nursing manpower. Consequently, BOR has no increasing or decreasing effect on the number of needed nurses (22). The recent attempt to reduce manpower predicting 1.7 people for each bed has led to absence of some essential services. This action was performed without the proper reduction of the high and middle level of organizations or decreasing the bureaucracy. Based on the study of *Sedghiani,* as a result of impracticability of serving with 1.7 manpower for each bed, hospital administrators have attempted to eliminate some of the hospital beds, instead. Meaning that there exist differences between the active beds and the actual capacity of the hospitals (23). Finally, although enough BOR exists for the studied hospitals, but taking advantage of the full capacity of the hospital that provides high quality and safe care, strengthening accountability, commitment and job satisfaction for employees and many other aspects need utilization of appropriate and sufficient human resources.

CONCLUSIONS

Generally, studied hospitals are in poor condition in terms of the number and composition of the nursing manpower in most of the wards. It is recommended to dedicate enough energy and time to determine the appropriate manpower rate in each bed of every hospital ward. Also, it is deduced that compensation of

nursing manpower and training department authorities with necessary instructions on planning and management of human resources can lead to efficiency and effectiveness of hospital activities.

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