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Nurse Staffing Norm in Iran Hospitals: What Features Should be Included for Success?

Seyed Saeed Tabatabaee, Ali Vafaee-Najar[1], Mohammad Reza Amiresmaili[2], Mahmood Nekoie-Moghadam[3]

Department of Health Management, Policy and Economics, Health Services Management Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran, [1]Department of Health Management, Health Sciences Research Center, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran, [2]Medical Informatics Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran, [3]Department of Health Services Management, Environmental Health Engineering Research Center, Kerman University of Medical Sciences, Kerman, Iran

Correspondence to:
Dr. Mahmood Nekoie-Moghadam, Department of Health Services Management, Environmental Health Engineering Research Center, Kerman University of Medical Sciences, Kerman, Iran. E-mail: mahmood.nekoeimoghadam@gmail.com

ABSTRACT

Background: Designing and implementing a model for estimation and distribution of required nurse is one of strategies to prevent unequal distribution of nurses within and between hospitals. The purpose of this research was to determine required features for hospital nursing staff estimation model.

Methods: We conducted a qualitative study using a Colaizzi analysis approach. We used semi-structure and in-depth interviews by purposive, quota, and snowball sampling of 32 participants (10 informed experts in area of policy making in human resources in Ministry of Health, 10 decisions making in employment and distribution of human resources in treatment and administrative chancellors of medical universities, and 12 process owners in hospitals). The data were analyzed using ATLAS.ti software version 6.0.15.

Results: The ten following sub-themes emerged from data analysis: Skill mix and task shifting, work measurement, legal support, stakeholder involvement in designing a model, considering the ward activity, considering type and extent of care patients required, model development by experts predominate in nursing process, considering the nurses availability, considering the capabilities and professional merits of nurses, fitness with social, cultural, and belief of people. The main themes were occupation analysis, planning and policy making, real workload, acceptability, nurses' efficiency, and being a native.

Conclusions: Given that standardization of nursing staff estimation is announced as one of the challenges in reaching Iran's 20-year vision plan. Hence, design and implementation of a nursing staff estimation model in regard to identified features could be part of priorities in Ministry of Health in Iran.

Keywords: Hospital, Iran, nurse, qualitative research

INTRODUCTION

Human resources in health care is known as a critical and determining factor in providing people health.[1] From past to present policy makers in national level are trying to find ways to prevent current inequalities in human resource distribution.[2] One of the aims of manpower planning in health care is to prevent using less than the required of very skilled personnel and using more than the required of low skilled personnel for specialized complex tasks.[3] Unequal distribution of health care staffing inside the country and between countries is a global, old and serious problem.[4] This matter could reduce the quality of care provided to patients.[5] To prevent unequal distribution of health care staff, strategies such as designing and implementing a model or norm estimation and distribution of manpower are employed.[6] In Iranian health system, hospitals are one of the most important organization providing health services, and one of the most significant problems in hospitals is unequal distribution of human resources.[7] Nurses as the largest group among human resources in hospitals, have essential role in hospital success and promoting community health.[8-10] Therefore for hospitals proper performance, it is essential to develop standards of human resource employment based on appropriate indexes for different type of hospitals. These standards along with opinion of experts can be used by hospitals for proper distribution of their human resource.[11]

So far many researches had been reported models for estimating of nursing staff[12-15] and had shown the relation between patient outcome and number of nurses.[16-21] However, a few studies had paid attention to the features of the model for estimation of nursing staff and its proper distribution, therefore the present study was conducted with the aim of determining required characteristics for designing and implementing a model for estimating size of nursing in hospital.

Nursing situation in Iran

In Iran nursing cadre consist of metron, clinical supervisor, training supervisor, head nurse, nurse, Behyar, Komak Behyar, technicians and experts in operating room and anesthesia.

Unlike some western countries in Iran, licensed nurses are not ranked and registered nurse (RN) is the single professionally accepted rank. On graduation from a nursing school, the graduates are considered RN, which is the least condition for nursing practice. By law all the nursing graduates in Iran, are obligated to work in governmental hospitals for 24 months, then they are permitted to apply for employment.[22]

Two other type of health staff are also employed to assist RNs. These two are Komak-Behyar and Behyar, who are trained out of higher education system. Behyars are able to provide primary nursing care by themselves, and more advanced care direct RN supervision. Two type of Behyar training programs existed. In one program the high school graduates has to pass an exam held by MoHME, and include a 1-year curriculum. In the other program, students are accepted from the 1st year of high school and program consists of a 3-year curriculum. The Komak-Behyars are trained during a short professional hospital-based course conducted by RNs, which is varied in length from 2 to 6 months. They are the junior member of the health care team, who are employed to be in direct contact with patients, satisfy their general needs and perform basic nursing tasks.[23]

METHODS

Design

This study was performed by qualitative methodology with a phenomenological approach.

Participants and setting

The study informants were high level mangers (from Ministry of Health), middle level managers (from Medical Sciences Universities and Provincial Medical Councils), and executive managers (from hospitals). Sampling was made by purposive, quota and snowball method, and continued until data saturation was reached. The reasons for choosing purposive, quota and snowball sampling method were as follow: For selecting people who has special views about the study subject, faster and easier access to other people who were hard to be identified by researcher, and to access more and deeper information.[24] Number of participant included 32 individuals who were informed experts in area of policy making in human resources (in Ministry of Health), decision making in employment and distribution of human resources (in treatment and administrative chancellors of medical universities), and nursing managers (in hospitals). Participants were selected based on having at least 4 years management experience, being familiar with nursing staff estimation and distribution methods, and willingness to participate in interview.

Data collection

In-depth and semi-structured interviews were used to collect data. The data was documented through writing by researcher and by recording the face to face interviews. Data collection continued until data saturation was reached. To design interview guide and for better understanding after literature review two in-depth interviews were performed. Interviews were conducted in the participants' office in a quiet environment. The date and time of interview was scheduled before interview by phone call. At the beginning of interview, a verbal consent was taken from participants for recording interview. The mean duration of interviews was 43 min; each session

lasted from 40 to 45 min. The interviews were performed from November 2015 to March 2016.

Data analysis

Colaizzi's analysis and ATLAS.ti software version 6.0.15 was used to determine main themes and sub-themes. Qualitative method with Colaizzi analysis is a suitable method for extracting valid and reliable results from text data, for production of knowledge and new perspectives, to depict the actual data and to provide practical guidelines.[25] Data were reviewed word by word by two researchers of study team. Then to identify classes related to participants experience in regard to study objective, collected data was discussed by all the research team. The fourth and the last authors were involved in designing classes and the first and the third authors confirmed the designed classes. It is worth mentioning that the first and the last authors had experience in human resource planning and the third author had experience in area of qualitative studies.

Data accuracy in this research was examined in regard to validity, reliability, confirmability and transferability based on the proposed criteria by Lincoln and Guba.[26] To confirm research validity, the written interviews were reviewed by participants and experts. A report was prepared from all the research activities performed by researchers including data collection, data analysis process and a selection from interviews. This report was submitted to an expert in qualitative research to confirm reliability and confirm ability of the study. In regard to ability to transfer information, with describing research details and providing proper explanation we tried to remove any ambiguity.

Ethical considerations

The research protocol was approved by Ethic Committee of Kerman Medical Sciences University (IR.KMU. REC.1395.350). An introduction letter was taken from management and information faculty and was submitted to participants. The participants received sufficient information about the aim of study and a verbal consent was taken from them. They were assured that the data would be kept confidential and results would be published without name.

RESULTS

Thirty-two participants from high, middle and functional level managers in health care area were separately selected (19 men and 13 women). The mean age of participants was 47.3 ± 6.12 and the mean years of work experience was 23.7 ± 5.7. The response rate was 100% [Table 1].

Colaizi analysis of data from the interviews and field notes generated ten sub-themes and six themes [Table 2].

Occupation analysis

Skill mix and task shifting

Assigning part of activities and duties to the less educated staff in a way that nurses could spend more time beside patients was proposed by some participants as a required feature of a model for nursing staff estimation in hospitals. In this relation one of participants stated that "presently our nurses perform tasks that are not very professional, before designing a model we have to rate the nursing care for example primary care, general care and special care; for special care senior nurse, for general care licensed nurse and for primary care a nurse with diploma must be used" (p9).

Work measurement

The required time for performing tasks is determined by qualified staff, and it is used for estimating workload and manpower in organization. One of participants in this regard said "in my opinion the first and the most important feature that a nursing staff estimation model must has is to be based on work and time measurement, it means that the workload of nurse must be determined" (p2).

Planning and policymaking

Legal support

Most of participants believed that hospital engagement in using a model, underlie the quality of nursing care and patient care. One of participants mentioned that "in Iran if something has to be done in hospitals, it must has legal form like 'Improving the productivity of nurse' law, if this was not dictated to hospitals as a law, no hospitals would implemented" (p6).

Stakeholder involvement in designing a model

Since in designing models for staff estimation different areas are involved and authorized, and sometimes these areas have different opinions, therefore developing a common language between stakeholders is mentioned by some participants. "In Iran, four areas of Office of human resource, Center for development and evolution, Treatment chancellor and Nursing chancellor of Ministry of Health are involved and beneficiary in designing nursing staff estimation model. When designing such a model representatives from these disciplines must

Table 1: Participants' characteristics

Variable	Gender		Work experience		Level of manager			Degree		
	Male	Female	<15 years	>15 years	Executive	Middle	High	Bachelor	Master	PhD
n (%)	19 (59.4)	13 (40.6)	0	32 (100)	12 (37.5)	10 (31.25)	10 (31.25)	11 (34.4)	9 (28.1)	12 (37.5)

Table 2: Themes and sub-themes of this study

Themes	Sub-themes
Occupation analysis	Skill mix and task shifting
	Work measurement
Planning and policymaking	Legal support
	Stakeholder involvement in designing a model
Real work load	Considering the ward activity
	Considering type and extent of care patients required
Acceptability	Model development by experts predominate in nursing process
Nurses efficiency	Considering the nurses availability
	Considering the capabilities and professional merits of nurses
Being a native	Fitness with social, cultural, and belief of people

participated to decrease probable risks. When these groups get involved eventually a common language will develop between them" (p12).

Real work load

Considering the ward activity
Some of participants mentioned that the number of hospital bed is not a good index for estimating the required nurses. One participant said "for designing a good model number of patients instead of number of beds must be used. Presently I have 45 beds in neurology ward, but around 60 patients are hospitalized in this ward, and this condition is repeated every day!!! (p13).

Considering type and extent of care patients required
Since most of hospitals are consists of different specialty wards, and each specialty required its own special nursing care, therefore study contributors believed that one single standard cannot be applied to all the hospitals. One manager stated that "nursing in internal medicine is different from nursing in surgery department, or pediatric ward. We cannot define one coefficient for all these departments, the same way that a physician cannot write a single prescription for all of his patients we cannot use one coefficient for all the hospital beds" (p6).

Acceptability

Model development by experts predominate in nursing process
Some of participants indicated that using experts familiar with work and time measurement is the necessary condition and proper familiarity with nursing process and patient care is the sufficient condition for designing a proper model for estimating nursing staff. In this relation one person said "in my opinion in designing a nursing model, the skilled nurses must be involved because they had worked on patients' side and know everything about patient care" (p2).

Nurses efficiency

Considering the nurses availability
Most of the managers emphasized that when estimating required nurses for doing ongoing workload, personnel

vacations or leave for medical reasons or delivery must be considered. One manager in this regard mentioned "in designing nursing model personnel temporary leave like maternity leave must be considered, in our university four out of five nurses is female, therefore maternity leave which is now 9 months is very influential in the number of available nurses" (p1).

Considering the capabilities and professional merits of nurses
Organizations staff are different in regard to capability, skill, work experience, intelligence, and talent. So many of contributors believed that one of effective factor in designing a proper model for estimating nursing staff is to consider differences in nurses skills. One manager stated that "when we talk about one nurse for n number of beds we considered a motivated, skilled nurse with self-esteem, however when we schedule 100 h mandatory extra monthly work for him, this nurse soon get unmotivated and weak, and supervisor cannot count on him even as a half-staff, however in counting this person is considered as one nurse" (p12).

Being a native

Fitness with social, cultural and belief of people
Many of mangers thought that every country has its own especial condition, which could influence the number of required nurses. They pointed to some of these conditions like time of shift work, and conformity of nurse and patient gender. One participant in this regard mentioned that "in Europe and USA, the night shift is 8 h while in Iran it is 12 h, if they consider one nurse for an 8-h shift we have to consider 2 nurses for a 12-h shift so each of them could have some rest time during shift" (p11).

DISCUSSION

The result of present study showed that the most important features of a model for estimating required nursing staff in hospitals from the perspective of experts in health care are skill mix and tasks shifting, measurement of work, legal force in implementing the model, stakeholders contribution in designing the model, considering the level of ward activity, attention to the type and amount of nursing care, model designing by those who are familiar with nursing processes, having in mind the usual availability time of nurses, considering capabilities and professional qualifications of nurses, and nurses fitness with social, cultural and belief of people in country.

Evaluating the present condition showed that one of main features in designing a model for estimating nursing workforce, is skill mix and tasks shifting. Participants believed that if before designing a model for estimating nursing staff, the skill mix and tasks shifting be considered seriously by Ministry of Health, the designed model will be more beneficial. The skill

mix is proper combination of health care personnel who provide care in an especial level of quality with the lowest cost. In task shifting it is expected that with rational redistribution of tasks among a working team in health care, the nonspecialized duties shift from skilled staff to the personnel with less education and low qualification. With this approach access to personnel is more efficient. This approach is suggested as one of ways to reduce effect of staff shortage and to provide opportunity for having a fair and stable health care system.[27,28] Since one of the primary goals of designing a model for estimating nursing staff is increasing the accessibility to nursing care, therefore using the policy of skill mix and task shifting can help to reach this goal.

Work measurement is define as using techniques to determine the required time for doing a task by a personnel with adequate education, information and talent.[29] Our finding about the importance of using work measurement as one of the features in developing a model for nursing staff estimation strongly supported this subject that model development must be based on objective matters rather than subjective ones. Myny *et al.* in his study about determining the standard time for nursing tasks, pointed that for distributing workforce in hospital wards nursing managers need some tools to help them make decision about nurses' workload based on objective criteria.[30]

The present study showed that one of required features for implementing a nursing staff estimation model is mandatory hospital compliance. Since March 2009, thirteen states and regions in Colombia approved or modified the laws for nursing staff employment, and 18 more states start to introduce these laws. State of California also approved the law for a minimum nurse-to-patients ratio in 2004.[17] It seems that although using the nurse-to-patients ratio can improve the quality of nursing care and patient outcome; however, it could increase human resource costs. Furthermore, arrangement must be made for providing enough nursing force.

Contribution and support of stakeholders in designing a staff estimation model can be very helpful through increasing their compliance in model implementation. Lack of attention to stakeholders in policy making in Iran, has been known as one of the most important problem in health system trusteeship.[31] Buchan study that compared features and primary outcome of using nursing ratios in California State of USA and Victoria State of Australia, indicated that failure in gaining stakeholders support was one of the biggest challenges in using nursing ratios.[32] It seems that the disengagement of stakeholders in policy making is related to the leadership and management method in high level of decision making, and lack of common interests among stakeholders.

In work measurement the importance of experience, attitude, and judgment of the person who performed it, is very high. Therefore, it is very important that estimation be made by a person who is quite familiar with the job and is well trained for it.[29] It seems that in designing a staff estimation model with objective method, which is based on work measurement, using people who are expert and familiar with work process is very imperative.

The study results also showed that one of other important features in designing a model for nursing staff estimation is considering the number of patients and also the amount and type of required care in each hospital ward. Although calculating the number of required nurses based on the number of patients, is a main factor in estimating the number of needed nurses,[33] but it only provide an approximation from needed nurses. The extent and type of nursing care is a more accurate method for evaluating the need for nursing force.[34] This means that the nursing workload in each hospital wards could be different based on the number of hospitalized patients, extent and type of required care, so considering one general coefficient for hospital does not meet the patients' needs. It is clear that for proper estimation of nursing force, measurement of real workload of nursing care is essential.[35] Since using the nurse-to-patient ratio is a tool for assurance of proper patient care, and on the other hand the need to nursing care is different between patients, therefore identifying the patients' needs to nursing care can be used as an accurate method for estimating required nurses.

Professionalization, skill, and capability of nurses in nursing tasks, is repeatedly considered,[36] therefore attention to nurses skills in developing an estimation model is very important. Hall *et al.* in his study stated that experience level, knowledge, and task shifting are factors that are usually forgotten in designing an estimation model.[37]

It seems that considering a coefficient as nursing care promotion coefficient in model designing can reduce the concerns about the professional merits of nurses. Although this coefficient in short term increase the human resource costs; however in middle term improve nursing care and patients outcomes.

One of the factors mentioned by participants was inconsideration of mandatory overtime work in determining the nurses availability time. Overtime work is usually used to compensate the chronic nursing shortage.[38] Considering the overtime work in determining the nurses available time, increase nurses availability time and lead to estimate fewer personnel. It also could have negative outcome including risking patients safety, decreased nurses satisfaction, increased risk of nursing errors, medication errors and so on. Tabatabaee *et al.* in their study found that reduced number of nurses to patients, increased work pressure, and mandatory overtime work are among most important reasons for occurrence of complications in hospital.[39]

The importance of conformity of nursing estimation model with social, cultural, economic and background condition of each country as one of the required features in designing a model, was observed in this study. The effective demand approach as one of the approaches for human resource estimation concern about population characteristics in regard to health level, health hazards, use of health services, and social, cultural, economic, background and political conditions, which could affect use of health services.[40] Although using the human resource estimation model in countries that emphasis on more effective and efficient use of manpower provide the possibility of more accurate estimation, however lack of attention to social, cultural, economic and belief condition can cause model failure.

Limitations

One of the limitations of this study was that since we could not access all the participants at once, and interview was used for data collection, it was possible that participants instead of talking about their experience used their knowledge for answering the questions. We tried by emphasizing on using their experience during interview, decrease this limitation.

The other limitation was the fact that we could not access all the people who were involved in designing the current models for estimating nursing staff. Finally, this study was performed in a country with its own especial culture, community, economy and political conditions, therefore the results could be only applicable in this environment.

CONCLUSIONS

Standardization of nursing staff estimation was announced as one of the challenges in reaching Iran's 20-year vision plan. Furthermore with implementation of healthcare reform, Ministry of health seeks to promote the quality of health care in hospitals with nursing care as a significant part of it. Certainly reaching these goals is not possible without proper distribution of nursing resources in hospitals. The proper distribution of nurses is depending on designing a proper estimation model for nursing staff in hospitals. So design and implementation of a nursing staff estimation model in regard to identified features could be part of priorities in Ministry of Health in Iran.

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Conflicts of interest

There are no conflicts of interest.

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