

# Resources–tasks imbalance: Experiences of nurses from factors influencing workload to increase

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## ABSTRACT

**Background:** While nursing workload is a worldwide challenge, less attention has been given to the determining factors. Understanding these factors is important and could help nursing managers to provide suitable working environment and to manage the adverse outcomes of nursing workload. The aim of this study was to discover nurses' experiences of determinant factors of their workload.

**Materials and Methods:** In this qualitative study, the participants included 15 nurses working in two hospitals in Tehran, Iran. The data were collected through 26 unstructured interviews and were analyzed using conventional content analysis. The rigor has been guaranteed with prolonged engagement, maximum variance sampling, member check, and audit trail.

**Results:** Resource–task imbalance was the main theme of nurses' experiences. It means that there was an imbalance between necessary elements to meet patients' needs in comparison with expectation and responsibility. Resource–task imbalance included lack of resource, assignment without preparation, assigning non-care tasks, and patients' and families' needs/expectations.

**Conclusions:** A deep and comprehensive imbalance between resources and tasks and expectations has been perceived by the participants to be the main source of work overload. Paying more attention to resource allocation, education of quality workforce, and job description by managers is necessary.

**Key words:** Content analysis, in-service education, lack of resources, nursing education, nursing turnover, patient acuity, workload

## INTRODUCTION

Nursing workload is a major challenge of health systems and an important theme in many nursing studies. As a keyword of medical terms in *Mesh database*, workload is defined as the volume of work an individual, a department, or other employed groups must do in a period of time. In the early 90s, nursing workload was defined as the total required nursing time, as a result of all works that should be done within a specified time period.<sup>[1]</sup> In 1997, Needham announced that definition of nursing workload is simple for nurses and includes the volume of work produced by patients during the time.<sup>[2]</sup> However, more precise assessment of this definition is much more complex. Needham defined the direct patient care, indirect tasks, and those not concerned with patients as the required nursing time and nursing workload. This definition accepts that the conducted task is, in fact, a nurse's responsibility,<sup>[2]</sup> not merely the patient care.

Myny believes that this definition is comparable with the definition by Bi and Salvendy who thought workload is a function of environmental and organizational factors.<sup>[1]</sup> Moreover, several dimensions of nursing workload have been suggested including physical, cognitive, time pressure, emotional, quantitative, qualitative, and diversity dimensions.<sup>[3]</sup>

Despite there being lack of a general definition about nursing workload, there is a general consensus in two cases: First, nursing workload is beyond what is done close to a patient and second, nursing workload is increasing.

Increased nursing workload is one of the main challenges of national and international nursing. In 1990, it was reported that workload was far beyond the amount reasonably practical.<sup>[1]</sup> A study reported that nursing workload has

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considerably increased within 16 years in a ward.<sup>[4]</sup> Some experiences concerning increased nursing workload were reported in a study that reviewed the states of nurses in the USA, the UK, Canada, Scotland, and Germany.<sup>[5]</sup> A study in Taiwan reported that nursing workload is twofold to sevenfold more than in the USA and other developed countries.<sup>[6]</sup> Many studies in Iran also reported high rate of nursing workload.<sup>[7,8]</sup>

Increased nursing workload is associated with extended consequences for nurse, patient, and organization. Workload and time pressure have been recognized as the most important stressors.<sup>[9]</sup> High workload is an important dimension of nurses' role; such a stress can influence their mental and psychological health and increase the economical costs for a society.<sup>[10]</sup> Stress, job dissatisfaction and burnout,<sup>[11]</sup> increased nursing turnover and professional employees' withdrawal,<sup>[1,10]</sup> impaired physical security, increased risk of desecration and nuisance to nurses, and also complaints of patients' families<sup>[11]</sup> have been reported as the major consequences of nursing workload.

Furthermore, the rate of workload influences patient's condition. Nursing workload is an important determinant of quality of care<sup>[1,11]</sup> and patients' safety.<sup>[12]</sup> Increased nosocomial infections,<sup>[1,13-15]</sup> delayed analgesic administration, lack of patient education, increased hospitalization,<sup>[1]</sup> delayed ventilator disconnection, increased iatrogenic complications,<sup>[14]</sup> medication errors,<sup>[16]</sup> and mortality<sup>[14-16]</sup> are the important outcomes of increased nursing workload for a patient. Moreover, lack of opportunity to think about required interactive manner with a certain patient<sup>[11]</sup> and impaired nurse-patient interaction<sup>[7]</sup> are the other major outcomes of increased nursing workload.

Harmful outcomes of increased nursing workload have been studied in many researches; in most of them, the general consensus about the role of nurse shortage and effects of imbalance in the number of patients-nurses has been reviewed. However, a few studies reviewed the factors influencing the nursing workload. Carayon introduced four levels of unit, job, patient, and situation as measurement models of workload. At the unit level, the most common workload index is the patient-nurse ratio. At the job level, the workload depends upon the type of job or specialty of nurse. The main determinant of nursing workload at the patient level is the clinical situation of a patient. Situation level explains the factors such as physical working environment, lack of appropriate and adequate provision of resources and facilities, diversity of family needs, and ineffective communications between members of a multidisciplinary team, which can all increase the situational workload. Moreover, each of these levels alone

has limitations and may not be able to explain workload sources in nurses.<sup>[17]</sup>

Other studies in this field reviewed some individual factors such as nursing labor shortage<sup>[5]</sup> and patient's situation.<sup>[3]</sup> Another study merely studied the impact of factors indirectly influence the nursing workload.<sup>[1]</sup> Findings of the above-mentioned studies indicated that there is no general theme of factors influencing nursing workload. Myny reported that despite much interest shown on the impact of workers supplying level on the quality of care, there is less attention paid toward the factors influencing nursing workload. Given the nursing shortage and complexity, better understanding of the factors influencing nursing workload is an important issue.<sup>[18]</sup> Identifying these factors might help the nursing manager to provide a suitable workload for the labor force and accordingly help them to manage many harmful consequences of increased workload.

Despite reports concerning heavy nursing workload in Iran, no study has ever been done specifically on the factors influencing nursing workload in Iran. According to the literature, naturalism paradigm and qualitative research methods see the reality based on the background facts, and accept multi-reality and numerous constructs of an event. Thus, they are useful for lesser well-known study areas.<sup>[19,20]</sup> Therefore, this study was conducted with a qualitative approach to detect experiences Iranian nurses' experiences of factors influencing work load to increase.

## MATERIALS AND METHODS

Given the complexity of the concept for workload and also limitations of studies specifically addressing this issue, the study design selected was a qualitative approach through conventional content analysis method. According to Elo and Kyngäs,<sup>[21]</sup> qualitative content analysis is a reliable research method to create reproducible and reliable inferences which might help to get a rich and comprehensive description of the phenomenon under study. This method is beyond a simple technique for describing data. Content analysis is extremely sensitive toward the content and can be applied to understand relationships and identify key processes.

### Study design and participants

Based on the report of Polit *et al.*,<sup>[19]</sup> in order to maintain the natural environment, the study was conducted where the phenomenon occurred, i.e. in general surgical, orthopedic, oncology, and intensive care unit (ICU) wards of two university hospitals in Tehran, Iran. The participants were objectively selected from among clinical nurses and nursing managers. Based on Holloway and Wheeler, the general

inclusion criteria were knowledge of the phenomenon under study, willingness and ability to transfer experiences,<sup>[22]</sup> and some more specific criteria included having at least 6 months of working experience.

Data saturation ended with 15 subjects including 14 women and 1 man, aged 24–50 years, with BSc degree in nursing. They were 2 nursing supervisors, 1 matron, 1 staff, 10 clinical nurses, and 1 MSc in biochemistry with BSc in nursing who had changed her course of study due to bad working condition and had rich experiences in this case. They also had from 8 months to 20 years of experience in various working shifts in bone marrow transplantation (BMT), pediatric, neonatal, dialysis, neurology, internal, and emergency wards.

### Data collection

Data collection was carried out through conducting unstructured interviews from July 2009 to August 2010. Following completion of each interview and initial analysis, interviews were conducted again in case of ambiguity to detect more in-depth data. Thus, 26 interviews with participation of 15 subjects were conducted. Interviews took 15–80 min, except one which took 2 h. General questions with open answers were used in the interviews, e.g. “*When did you feel the workload?*” and then, in order to achieve more in-depth and richer data, exploratory questions were used, e.g. “*Can you explain the situation with a real example so that I understand it?*,” “*Please explain more,*” etc., The interviews were continued until “unidentified data” or “new category” was obtained, according to the study of Strubert and Speziale.<sup>[20]</sup>

### Analysis

According to Elo and Kyngäs,<sup>[21]</sup> for analysis in the preparation stage, the whole interview might be an appropriate background for deriving the units of meaning which were selected as the most appropriate units of analysis. Each interview was read repeatedly to reach was read repeatedly for immersion in data. In the organizing stage, open encoding was conducted with a review of interviews and recording notes and some titles and subjects in their margin. Thereafter, the titles were recorded in encoding sheets. Grouping started after conducting a few interviews. By repeating the above-mentioned procedure for each new interview, some titles were added and complete categories emerged. Comparing and merging the categories related to a group reduced the primary categories. Subcategories were divided and groups with similar events were categorized as one class. Each class or category was named with terms indicating its content. The process of abstraction continued until formation of the main content. Moreover, the reminder interpretations concerning the association between the concepts were recorded during the analysis.

### The strength of the study

Prolonged engagement in field and sufficient time to communicate and collect data helped to boost participants' trust and interaction and to collect in-depth data. Furthermore, maximum variance in the distribution of samples according to age, work experience, position, and so forth was used in this study. In order to make sure that the analyses accurately reflected experiences of the participants, member check was done within data analysis and collection, and necessary changes were applied in interpretations to enhance study credibility according to the comment of the subjects, if necessary. For providing dependability and confirmability, a part of crude data was audited by experts, including interviews and analyzed outputs (primary codes and categories obtained).<sup>[19]</sup>

### Ethical considerations

The study was started after obtaining permission from the Ethics Committee of University of Tarbait Modares and hospitals. In addition, sufficient explanations were given to the participants about the importance, objectives, and the study method, particularly the interview record, content process, confidentiality in all stages of the study, and mutual decision-making concerning the time and place of the interview. In addition, an introduction of the interviewer and the way that the participants could access the study findings were provided to the study subjects.

### RESULTS

Following data analysis, “imbalanced facilities and tasks” appeared as the main theme which indicated factors influencing increase in nursing workload. “Imbalanced facilities and tasks” means disproportion between the necessary elements for responding to the patients' needs with defined expectations and responsibilities for nurses. “Imbalanced facilities and tasks” had four dimensions: “Insufficient resources,” “assignment with no preparation,” “assigning non-medical and non-care tasks,” and “needs/expectations of patients and families,” which caused increased nursing workload based on the experiences and perceptions of participants. These aspects will be discussed further in the following text.

#### Insufficient resources

This means shortage of the required resources for patient care and task implementing. These elements were diverse and divided into two categories:

- Worker shortage, i.e. disproportion between the number of nurses and services labor compared to the number of patients and their expectations and needs. This was a chronic issue and concern, but was experienced acutely in some circumstances such as

weekends and during replacement of absent nurses. Worker shortage not only increased the number of working shifts and hours illegally to a large extent, but also increased the number of patients cared by a nurse during a shift and caused increased nursing workload. Concerning worker shortage in the oncology ward, participant No. 1 said:

*“The work pressure is pretty high now and nurses are not that much; this ward used to be run with four to five nurses, now we are only two. A clerk was added to us after a lot of insistence; otherwise we used to do the office affairs by ourselves.”*

- Shortage of facilities and equipments was one of the main experiences of nurses, including many sources such as financial aid and the necessary equipments for advanced care. Lack of equipment *per se* could directly increase the workload, and also, waste time, slow work, and increase the complexity of the situation. For instance, as a consequence of shortage of beds, ICU patients were hospitalized more in general wards, which increased the workload and working pressure. This merely was not due to increased workload caused by the nature of disease and the type of required care for a special patient, but was due to the fact that care for intensive patients in general wards took more energy and time than care for patients in the ICU owing to lack of adequate facilities and equipment. Participant No. 4 said:

*“Workload is extremely high where you get shortage of equipment. There is only one laryngoscope for cardiopulmonary resuscitation (CPR); at the same time, you have to go for another CPR in another ward quickly. When a resident needs gloves and we don't have it, we must go and take a pair from the other ward. These all are tasks, means time, the simplest case is bed. When ICU has no bed, intensive patient stays out with a ventilator. Devices raise alarm, then nurse must go and check the device every ten minutes and pass this long corridor to check the patient and come back. It makes a difference when a nurse can directly observe patients in ICU; the path should not be that long; then, it takes much more time to do the job.”*

### **Assignment with no preparation**

Experiences of nurses showed that one of the main sources for workload was lack of professional preparedness and assigning responsibility without the required scientific competencies for playing the role and tasks. The experiences of nurses showed that deficiency in educating in terms of necessary scientific and professional competencies start from the university level, and not only has not been

compensated during their employment, but also has continued and also intensified due to lack of adequate in-service training. Eliminating novice nursing orientation courses, lack of financial support from the training department, and inappropriate quality and insufficient development and in-service training programs were the most important experiences of the participants. This issue caused more problems for in scheduling for nurses with inadequate experience. An educational supervisor (No. 15) stated that in-service training and orientation programs used to be in such a way that nurses had a relative familiarity with ICU in addition to the information related to their own particular ward; however, nowadays nursing training programs are not enough and their programs have been eliminated. Participant No. 15 said:

*“When a new graduated nurse came here, he/she went for a nursing orientation program for two weeks in ICU and also two weeks in their own ward. But now it is a human force shortage, and it is impossible to do it again.”*

The experiences of nurses showed that the outcome of deficiency in teaching professional competencies was the deficiency of knowledge and inability to take up the assigned responsibilities. Lack of necessary knowledge and competency for taking responsibilities caused nurses to try various ways to do a task. This means rework, fatigue, and wasting time. One of the nurses (No. 14) said:

*“When you do the venipuncture for adults, you can see the veins by your eyes, but for infants it should be done by anatomical science. We tried to do the venipuncture for an hour and half. Experience is essential, but in-service training is more important. Where have we learned to do the venipuncture for infants? Do you know how much energy and time was taken by us? When there is no training, you need to try different things over and over and spend a lot of time and energy. No one taught us about infant's nasogastric tube (NGT); we tried it many times with the same adult method; well, it did not work and it increased our task.”*

In view of some of the participants, “assignment with no preparation” had similar effects to “insufficient resources;” assignment with no preparation was a type of qualitative shortage of workers that increased the workload of other nurses. An experienced nurse (No. 5) stated the following about lack of competency in some novice nurses and tiredness caused by the workload:

*“One new nurse has recently been added and no one knows how she works! Patient is suffering from phlebitis; from night to morning, she does washing the line over and over with this phlebitis. The patient must call a million times more and say, ‘I have pain;’ finally, the head nurse*



*must go and see what has happened. Many times I have worked here for afternoon and night shifts and I cannot stand anymore with such illiterate naive new nurses!"*

### Assigning non-medical and non-care tasks

This was an important source of workload which was confirmed by all the participants. Nurses believed that "assigning non-medical and non-care tasks" was a virtual and unprofessional job description for imposing unnecessary and waste duties. This has been experienced in two forms.

- *Changing the nature of health care to competitor of care:* One of the important sources for increased workload was overemphasis of managers on indirect cares such as frequent report writing, so that such measures became a competitor of care with increased nursing workload and by wasting time and energy of nurses, caused them lose the care objectives. One of the nurses (No. 6) described his/her experience as the following:

- *"We have to generally write a lot. When you've got 14 patients, you must write 14 reports rather than observe whether the patient received the correct medication. Once something should be purchased out of hospital, I write it was not available. Then, that patient would lose that medicine. If I don't have to write, I would find a physician and tell him to prescribe the medicine in their medical sheet; our biggest issue is lack of time. Many times, every thing is missed for patients."*

- *Assigning other irrelevant tasks:* Nurses also experienced increased workload due to other irrelevant tasks assigned to them. This type of task was diverse and included performing unprofessional affairs by an expert and professional nurse. Assigning other irrelevant tasks was also a chronic concern; however, it had been experienced severely when administrative clerks and staff were off and their jobs were imposed on the nurses. Such an irrelevant job description intensively increased nurses' workload. One of the participants (No. 2) stated about imposing irrelevant administrative affairs of secretaries and administrative staff and increased workload:

- *"Fridays (weekends) we might have discharge too, but there is no clerk. I do her job by myself as an extra duty. I also have to do her job. This is added to our task even in weekends."*

### Patients' and families' needs/expectations

The experience of nurses showed the real needs of patients and families, particularly the need for the presence of a nurse and providing direct care for treatment and supporting their families, as one of the main sources of workload. Findings showed that the more complicated the patient condition

was, the higher was the workload. An experienced nurse in BMT ward pointed out that the patients admitted in these wards are very weak and vulnerable and are not able to have self-care; therefore, they need an accurate care results in high workload for nurses. This participant (No. 5) said:

*"Suppose you were working nonstop at morning; you had to wash the line repeatedly, blood samples had to be taken every day. Some patients did not have medicine, besides you had to wait for them to go to bathroom and take a shower, and clean their bed by yourself (such patients were not able to do anything)."*

Another nurse (No. 14) stated:

*"A patient who was not able to see was admitted due to exploded firecracker in his eyes in new year celebrations. He insisted to open his eyes; his hands were tied not to open his bandages. He used to say, 'There is itching, I have pain.' His brothers and sisters also came by visiting me and asked repeated questions: 'Why did you tie his hands?' How much we must ask them not to cry near him and do not tell him that has been blinded; you know these tasks are beyond normal expectations; it takes a lot of energy."*

In their experiences, in addition to urgent and real needs, the unrealistic expectations also intensified the imbalance between workload and time and increased work pressure of nurses. Participant No. 5 stated:

*"VIP patients expect to do everything in the best way, they expect to disconnect their serum when finished; sometimes it takes some time to reach them from another room when they page you. Perhaps, there is something more urgent and should do it with the first priority, but they expect to do their job as soon as they call you, whether the patient or their relatives."*

## DISCUSSION

The findings of the study showed that "imbalanced facilities and tasks" was the main theme of the nurses' experiences on the factors influencing increase in nursing workload. "Imbalanced facilities and tasks" indicates the inappropriateness between what nurses have and what others expect them to do, and also indicates lack or deficiency of elements such as workers, financial resources, facilities and equipment, knowledge, and required competency for implementing tasks. The other side of this imbalance is encountering the expectations and demands of the system, patients, and families. In addition to being in a situation with shortcomings and limitations, nurses have to do other irrelevant and non-care tasks, and fulfill the needs and expectations of patients and families. These findings are not confined to Iran. Evidence indicates that job/workload demands are higher than nurses' abilities.<sup>[23]</sup>

Insufficiency of working resources and the high-demand tasks have already been reported as concerns of nurses.<sup>[24]</sup>

In the present study, insufficient resources indicate shortage of workers, facilities, and equipments for care and nursing duties. Shortage of professional and non-professional nurses and its impact on increased workload is one of the main themes in many studies. Shortage of nurse is a worldwide concern, causes limitation in worker supply and increased nursing workload,<sup>[11]</sup> and has negative impacts on health care.<sup>[25]</sup> In a study in Iran, nurses faced with low worker supply and shortage of nonprofessional labor, which led to high workload, forced labor hours, time limitation, and excessive tiredness.<sup>[8]</sup>

Studies have shown that reasons for shortage of nurses are multidimensional. Increased need,<sup>[25]</sup> changes in demographic population and increased demand due to aging and elderly population,<sup>[26]</sup> demographic changes in nurses workforce,<sup>[25]</sup> nursing workforce profile, valued experience, and quality of nursing staff which can transfer them to other industries<sup>[23]</sup> have major role to play in shortage of nurses. Stressful,<sup>[25]</sup> insecure, and unacceptable working places have negative impacts on the nursing workforce. Other factors influencing nursing workers' shortage are organizational structure and inappropriate management practices and strategies for manpower supply,<sup>[23]</sup> decreased manpower supply due to the pressure of costs and accordingly implementing forced overtime which increases the workload and decrease nurses' control on their program and can influence the decision on whether to stay or withdraw from this profession.<sup>[26]</sup>

In the present study, shortage of financial resources, facilities, and equipment was one of the other dimensions of "insufficiency of resources." Current era is called the era of cost-limit policy,<sup>[15]</sup> which means highly extended limitations. Inadequate logistics, such as lack of medical equipment and computer and beds in ICUs, is an important factor that increases nursing workload. Other studies reported that physical working environment, inappropriate supply of resources and facilities,<sup>[17]</sup> and factors related to the technology, tools, and equipments cause increased nursing workload.<sup>[27]</sup> For instance, parallel with the technological advancement, the nursing working hours is increased for managing the advanced technology.<sup>[28]</sup> Blay *et al.* also reported that bed shortage increases nursing workload and has negative outcome for patients. This type of workload is one of the reasons for nurses withdrawing from the profession.<sup>[29]</sup>

"Assignment with no preparation" that indicates shortage in education is one of the other resource-task imbalances emphasizing on lack of competency. Besides, findings

indicated that assignment with no preparation not only increases workload of non-competent and unqualified nurses, but also increases the working pressure of other nurses. Findings suggested that this issue has a direct association with insufficiency of academic and in-service education. Unlike the findings of the present study, there was a satisfied level of competency in new nurses who graduated from public and governmental universities of Jordan.<sup>[30]</sup> Lack of effective preparedness<sup>[31]</sup> and low educational level<sup>[24]</sup> have also been reported. A literature review reported that education as a nurse's feature is one of the factors influencing the workload.<sup>[1]</sup> Furthermore, these studies showed that when experienced nurses take the responsibility of supporting and educating inexperienced nurses, they could experience workload.<sup>[32]</sup>

"Assigning non-medical tasks" was one of the sources of nursing workload. In a study, regardless of workload, nurses were found to mostly spend their time on indirect care.<sup>[33]</sup> Aein *et al.* also reported that nursing managers did not believe in job description; therefore, nurses had to do some tasks they were not supposed to do and this increased their workload.<sup>[8]</sup> In a study, nurses of five counties reported that they had to do so many irrelevant affairs.<sup>[34]</sup> Needham quoted from Barratt (1994) and reported that as a profession, nurses need to be clear regarding their role and uniqueness of their knowledge and skills that a nurse is able to do. Needham also stated that there are many ambiguities concerning the role of nurses both inside the system and in the society.<sup>[2]</sup> A study regarding the duties of nurses showed that nurses do some affairs at different times, such as cleaner, nutritionist, carrier, office worker, clerk, receptionist, and physician, and it seems that all these professions lead to increased workload for nurses.<sup>[2]</sup>

"Patients' and families' expectations and needs" was the other major source of workload. Literatures indicate that acuity of patient includes the amount of nurse's standard workload that is derived from the dependency of the patient and the amount of direct care that the patient receives. If a nurse spends more time due to patient's dependency and the population of that ward comprises many dependent patients, then higher workload would be expected.<sup>[35]</sup> According to the workload model, patient is an important determinant for the main nursing workload for clinical set. According to the local level model, diverse needs of families can increase the workload.<sup>[17]</sup> Moreover, reports illustrate that most of the time, patients expect more direct care than what is really needed; therefore, it leads to patient-nurse dissatisfaction.<sup>[18]</sup>

### Limitations and strengths

Emerged patterns and structures in qualitative studies are

context-dependent; this restricts the applicability of the findings. However, the maximum variation in the sampling from different parts was one of the strengths of this study, which increases the application of the findings.

## CONCLUSIONS

Findings of this study show that there is a deep and widespread imbalance between resources and ability and competencies of nurses on one hand and tasks and expectations on the other. This imbalance is the main cause of increased nursing workload. Findings of this study indicate that educational and clinical managers must necessarily consider allocating resources and also adopt approaches for supplying resources and educating qualified nurses. Clarification of nursing job description should also be done. Furthermore, the findings of the study can be the basis for the development of tools to measure nursing workload. Given the ambiguity of the workload concept despite multiple texts, further analysis of this concept is proposed.

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