

## The relation between Job Demands and Work Engagement among Nurses in Intensive Care Unit

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### Abstract:

**Background** The work of a nurse may be emotionally and mentally taxing. Promoting patient safety is an essential responsibility of intensive care unit nurses. These nurses deal with patients who have life-threatening illnesses requiring intricate diagnostic and treatment processes. Healthcare companies are grappling with the difficulty of attracting and retaining skilled personnel, adding to the significant hurdles they already confront. The nursing profession, the standard of nursing care, and the involvement of nurses are becoming more and more of a focus on a worldwide scale. **Aim:** Evaluate Job burden and work engagement among nurses in Intensive care units. **Subjects and Method: Design:** The study's methodology was based on descriptive correlation research. **Setting:** All areas of Tanta Main General Hospital and the Emergency Hospital participated. **Subject:** The study subjects consisted of all nurses (n=390) from the earlier revealed setting. **Tools:** 2 tools were managed for collecting data (1) questionnaire Nurses' work engagement Assessment Scale (2) Nurses' Job demands. **Results:** Over half of nurses had moderate levels of overall job demands. The majority of nurses had low levels of work engagement. There was a statistically significant correlation among nurses overall Job demands and staff nurses overall work engagement. **Conclusion:** Job demands had a significant contribution to staff nurses work engagement. **Recommendation:** Staff nurses and head nurses should participate in frequent training sessions that address job needs and employee engagement. Nurses should not have to complete as much unrelated work, particularly during lengthy shifts, and should be able to focus on helping patients instead of being overwhelmed by paperwork.

**Keywords:** Job demands, Intensive care unit, Work engagement.

## Introduction

Nursing is highly stressful and challenging profession. The global concerns are increasing toward factors that interfere with nursing professions. Shortage of nurses, increasing job demands, increasing patients' health needs and demands, and the health issues are among the main concerns that nurses are challenged with nowadays and for the next few years (**Alshammari, & Torres, S.et al., 2020**)

When caring for patients, nurses must take into account their mental, physical, financial, and emotional needs as well as the specifics of each patient's shift. It is well-established in the literature that such expectations constitute occupational stresses.

Nursing job demands refer to the characteristics of the job that need sustained nurses' cognitive and emotional effort as well as nurses' skills to achieve high quality of care. Where it may turn into job stressors when nurses' work requires high effort and abilities and nurses cannot recover from these stressors. The specifics of a nurse's workday are very context and patient condition dependent. In order to meet the needs of their patients, nurses must take a comprehensive view that considers not just the physical but also the mental, emotional, and work-related aspects of each patient's condition (**Al-Oweidat et al., 2023**).

Quantitative demand, often known as workload, is the quantity of work that people believe they are required to do

in a short era of time, measured in terms of how quickly they work. On the one hand, nurses must carry out their duties and offer high-quality nursing care; on the other, they face significant challenges in coping with the stress that comes with their work (**Gopinath et al., 2022**).

A job's physical demands include things like the amount of physical effort needed to complete tasks, the quality of working conditions, and any mandatory overtime that may be in place. There are a variety of physical challenges on nurses, including working in a workplace with a high nurse-to-patient ratio and inadequate resources (**Gopinath et al., 2020**).

The emotional component of work and the frequency with which one must deal with emotionally taxing events as a result of one's employment are what are known as emotional job demands. It is the frequency one is exposed to emotionally demanding situations and to those aspects of the job that require sustained emotional effort because of (extensive) contacts with others and patients. Emotional demands at the workplace consist of the aspects of work which require constant emotional input from the nurses mostly as a result of interactions with patients.

Many people who work in healthcare settings work irregular hours, including nights, weekends, and part-time. As a result of all these expectations, nurse managers have refocused their efforts on managing organizational and human issues that might have an impact on

nurses' work stress and demands, both in the short and long term. Burnout, presenteeism, poor treatment quality, turnover, discontent, and nurses' participation in their work are some of the negative outcomes that may occur when job demands surpass nurses' adaptive capability (**Fogliatto et al., 2024**).

When nurses are emotionally and intellectually invested in their profession, they form strong bonds with their coworkers and managers. Physical, mental, emotional, and behavioral engagement are all signs of an engaged nurse. Putting one's body into an activity shows one's enthusiasm and drives to complete it. An individual's level of cognitive engagement can be described as the amount of mental effort they put into a positive arrangement, which involves the provision of emotionally connected personal resources. These resources can include beliefs, feelings of personal meaning, and connections to people, situations, or contexts within the context of their work. Affect oriented toward a number of work-focused goals related to the current temporal experience is shown by emotionally engaged nurses. Behavioral engagement is a psychological state of intention to behave in a manner that positively affects performance (**Albuqami et al., 2023**).

Behaviorally engaged nurses are willing to put in extra effort, work harder for their team and organization and to do more than is expected. Where,

nurses' work engagement reduces nurses' absenteeism and turnover, improves nurses' morale, increases safety and nurses' motivation in intensive care units.

Critical decision-making, assisting patients in life-threatening situations, and dealing with emotionally taxing encounters are all part of an intensive care nurse's job description. As a result, nurses are exposed to work stress with negative consequences including dissatisfaction that affect their engagement in work. The likelihood of errors is increased when disengaged nurses hurry through routine procedures. Additionally, they are unable to connect with their peers in a timely manner and are struggling with empathy, exhaustion and fatigue, which impedes their capacity to concentrate on the task at hand and address the patient's requirements (**DiClementi et al., 2020**).

### **Significance of the study:**

Intensive care nurses must be able to make split-second choices, assist patients in severe condition, and deal with emotionally taxing encounters on the job. As a result, nurses are exposed to work stress with negative consequences including dissatisfaction that affect their engagement in work. Where, disengaged nurse streams through routine processes which increases the chances for errors. They also fail to communicate with their peers in a timely manner and suffer from compassion fatigue and burnout

which affects their ability to focus on the task at hand and respond to the patient's needs. So, this study needs to be addressed to assess nursing job demands and its relation to nurses' work engagement (**Rathnayake et al., 2022**).

### **Aim of the Study**

Assess Job strains and work engagement between nurses in ICU.

### **Research Question:**

What is the correlation among job load and work engagement between nurses in ICU?

### **Subjects and Method**

#### **Study design:**

Descriptive correlation research design was utilized in this study.

#### **Study setting:**

The study was accompanied in ICU at Tanta Main University Hospital and Emergency Hospital. At emergency hospital include trauma & emergency, anesthesia. Tanta Main University Hospital contains medical, neurological, cardiac, ophthalmology, chest, neonatal and pediatric.

#### **Subjects:**

All registered nurses (n=390) working at the aforementioned facility who were accessible during data collection were included in the research: Trauma of Emergency (n=35), Medical ICU(n=53) Anesthesia, ICU(n=60), ICU(n=25), Ophthalmology Anesthesia, Neurological ICU (n=52), Cardiac ICU (n=20), Chest ICU(n=16), Neonatal ICU (n=89) and Pediatric ICU (n=40).

### **Tools**

To achieve the aim of study, the following tools were used.

#### **Tool I: Nurses' Job Demands Questionnaire**

To evaluate the scope of nurses' responsibilities, the researcher created this instrument using Al Homayan (2013) and other current relevant literature as a reference. It was separated into the following 2 sections: **Part 1:** Demographic information on nurses, including their years of experience, age, marital status, department, education level, sex, and number of children.

- **Part 2: Job Demands Assessment:** Assessing levels of nurses' job demands. It contains thirty-five elements classified into 4 subscales:
- Quantitative or workload demands: included 7 items (1-7).
- Physical demands: included 15 items (8-23).
- Emotional demands: included 6 items (24-30).
- Work shift demands: included 4 items (31-35).

#### **Scoring system:**

Three criteria were used to evaluate the nurses' replies. The Likert Scale included three possible responses: (1) disagree, (2) neutral, and (3) agree. After tallying up all the categories into levels according to the cutoff point, the final scores were determined statistically in the following way:

-A high level of job requirements, 75% or more.

- Job demands range from 60% to less than 75%.

-The job demands are low, less than 60%.

### **Tool II: Nurses' Work Engagement Scale**

The researcher modified this instrument to evaluate the work engagement of nurses, following its development by Tiwari (2019). It was composed of 41 items, which were categorized into four subscales as follows:

- Physical work engagement: included 10 items (1-11).

-Cognitive work engagement: included 7items (12-19).

-Emotional work engagement: included 12items (20-32).

-Behavioral work engagement: included 8items (33-41).

### **Scoring system:**

Nurses' responses were measured on three points Likert Scale ranged from 1-3 where (1) disagree (2) neutral (3) agree. The total score was statistically calculated by summing all categories into levels according to cutoff point as follows:

-High Level of work engagement  $\geq 75\%$ .

-Moderate level of work engagement 60 percent - <75 percent.

-Low level of work engagement <60 percent.

### **Method:**

1. The research was getting official approval from Tanta University Hospitals' administration before being

presented to the relevant authorities in the chosen locations.

### **2.Ethical consideration:**

a- Agreement of the ethical committee at Faculty of Nursing was gotten (24).

b) The research itself was neither painful or harmful to the nurses.

c-After giving nurses information about the study's purpose, nature, confidentiality, and withdrawal procedures, the nurses gave their agreement to participate.

d-When gathering information, precautions were taken to ensure confidentiality and privacy.

3. A panel of five subject-matter experts will review the Arabic translations of Tools I and II to ensure that the questionnaires are clear and that the material is genuine. The five specialists were 2 professors and an assistant professor from Tanta University's Faculty of Nursing who taught all courses in Nursing Service Administration.

-The authorities' reactions were exemplified in 4 points rating scale ranging from (1-4);4=strongly relevant, 3= relevant, 2=little relevant, and 1= not relevant. Necessary modification was done including clarification, omission of certain items and adding others and simplifying work related words.

5-A pilot study was executed on a sample (10%) of the nurses (n=39) nurses, and Whilst data was being collected, they were left out of the main research sample. Prior to beginning data collecting, pilot research was

conducted following the expert's recommendation. The goals of the pilot research were to ascertain how long it would take to finish the questionnaire and to check for issues with item sequence, clarity, application, and relevance. The researcher made adjustments to the tool based on input from the pilot trial. The staff nurses predicted that it would take twenty to thirty minutes to complete the questionnaire.

6- Data was gathered from nursing staff using the Nurse Job Demands and Nurses Work Engagement surveys.

7- Phase of data collection: the researcher gathered the data from the staff nurses. During normal business hours, the researcher visited with the nurses who were to fill out the survey at several locations. For the sake of accuracy, the individuals made note of their responses as the researcher watched. Over the course of six months, the data was gathered.

### **Statistical analysis:**

Statistical Package for the Social Sciences, version SPSS, was used to organize, analyze, and tabulate the acquired data.

(16). Range, for quantitative data, standard deviation and mean were determined. For qualitative data, comparison between two groups and more was done using chi-square test. Correlation between variables was evaluated using Pearson's correlation coefficient ( $r$ ). Significance was adopted at  $p < 0.05$  for interpretation of results of tests of significance.

Data was fed and analyzed by the computer using IBM SPSS software package version 20. (New York: IBM Corp., Armonk) Quantitative and qualitative data were characterized by percentages and counts. median, Mean, standard deviation, and range (maximum and minimum) were utilized to characterize quantitative data. We used a 5 percent threshold of significance to evaluate the data.

### **Results**

**Table (1):** Shows personal characteristic of nurses containing their years of experience, age, department, marital status, educational qualification, gender as well as number of children. The table presented that high (71.8%) of nurses had age < 25 years with mean age (26.37+6.30). The majority (83.3 percent) of nurses had less than 5 years of experience with mean 3.16+1.82. Nearly to quarter (22.8%) of nurses worked in neonatal intensive care units. Nurses (15.4%), (13.6%), (13.3%), (10.3%), (9.0), (6.4%), (5.1%), (4.1), were working in Emergency Medical, Neurological, Pediatric general medical, Cardiac Care Unit, Ophthalmology Anesthesia, Chest, General Medical respectively. Nearly two thirds (64.9%) of nurses were married and (100%) of nurses were female as well as (63.84%) had one child. Around half (45.9%) of them had bachelor science of nursing, (34.6%) had nursing technical institute and (12.1%) had diploma in nursing and only (7.4%) of them had master's degree in nursing.

**Table (2):** Shows nurses' overall level of job demands. The highest percentage (64.9%) of nurses had high level of quantitative or work load of job demands dimension. high percent (66.4%) of nurses had moderate level in work shift Job demands dimension. Equal high percentage (78.2%) of nurses had low level of physical and emotional dimension of job demands.

**Figure (1):** The figure shows levels of overall nurse's job demands. More than half of nurses had moderate levels of overall job demands. While more than 1 third of nurses had low level of job demands.

**Table (3):** Shows nurses' overall level of work engagement. Majority (95.4%,85.4%) of nurses had low levels in emotional work engagement and physical work engagement respectively. More than three quarters (75.6%) of nurses had low level in behavioral work engagement. While more than half (53.3%) of nurses had low level in cognitive work engagement.

**Figure (2):** Shows levels of nurses' overall work engagement. The common of nurses (98.5%) had low level of work engagement. While the minority (1.5%) had moderate level of work engagement.

**Table (4):** Show up the correlation among overall nurses' job demands and over all of nurses' work engagement. There was statistically significance correlation between physical work engagement and quantitative and emotional job demands at  $p \leq 0.05$ .

There was statistically significance correlation between cognitive work engagement and quantitative and emotional job demands at  $p$  less than or equal 0.05. engagement. There was statistically significant relation among their qualifications and years of experiences and staff nurses work engagement levels at ( $p \leq 0.05^*$ ).

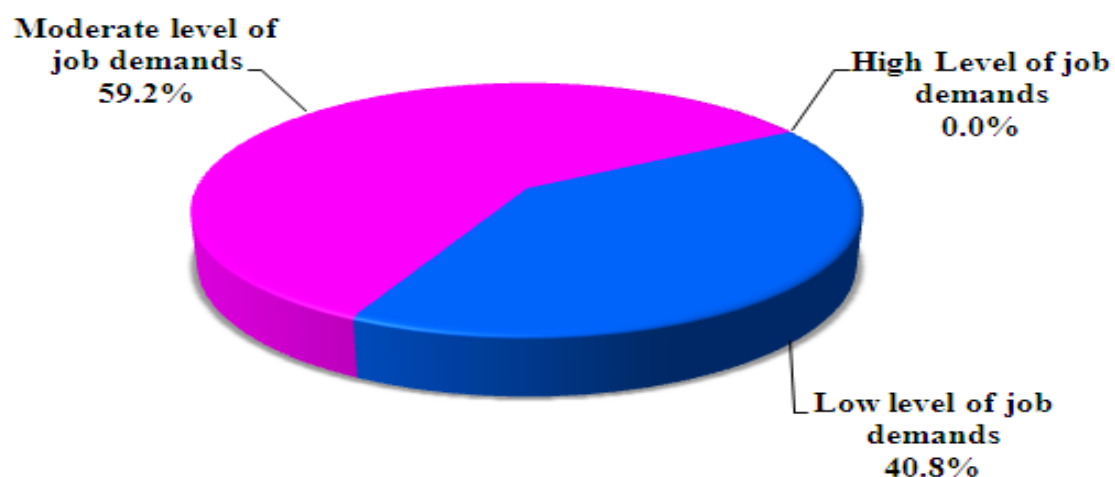
**Table (1): Nurses ' personal characteristics (n = 390)**

| Personal characteristics                      | No.          | %     |
|---|--------------|-------|
| Age   |              |       |
| <25   | 280          | 71.8  |
| 25–<30  | 42           | 10.8  |
| 30–<35  | 23           | 5.9   |
| ≥35   | 45           | 11.5  |
| Min. – Max.                                   | 20.0 – 56.0  |       |
| Mean ± SD.                                    | 26.37 ± 6.30 |       |
| Years of experience                           |              |       |
| <5  | 325          | 83.3  |
| ≥5  | 65           | 16.7  |
| Min. – Max.                                   | 1.0 – 9.0    |       |
| Mean ± SD.                                    | 3.16 ± 1.82  |       |
| Department (ICU)                              |              |       |
| Emergency Anesthesia ICU                      | 60           | 15.4  |
| Emergency Medical ICU                         | 53           | 13.6  |
| Neonatal ICU                                  | 89           | 22.8  |
| Pediatric ICU                                 | 40           | 10.3  |
| Neurological ICU                              | 52           | 13.3  |
| Cardiac Care Unit                             | 25           | 6.4   |
| Ophthalmology Anesthesia ICU                  | 20           | 5.1   |
| Chest ICU                                     | 16           | 4.1   |
| General Medical ICU                           | 35           | 9.0   |
| Marital status                                |              |       |
| Divorced                                      | 21           | 5.4   |
| Married                                       | 253          | 64.9  |
| Single  | 116          | 29.7  |
| Educational qualification                     |              |       |
| Bachelor science of nursing                   | 179          | 45.9  |
| Nursing Technical Institute                   | 135          | 34.6  |
| Technical Secondary School Diploma in Nursing | 47           | 12.1  |
| Master's degree                               | 29           | 7.4   |
| Gender  |              |       |
| Female  | 390          | 100.0 |
| Male  | 0            | 0     |
| Number of children                            |              |       |
| 1   | 249          | 63.8  |
| 2   | 94           | 24.1  |
| 3   | 32           | 8.2   |
| 4   | 14           | 3.6   |
| 5   | 1            | 0.3   |
| Min. – Max.                                   | 1.0 – 5.0    |       |
| Mean ± SD.                                    | 1.52 ± 0.81  |       |



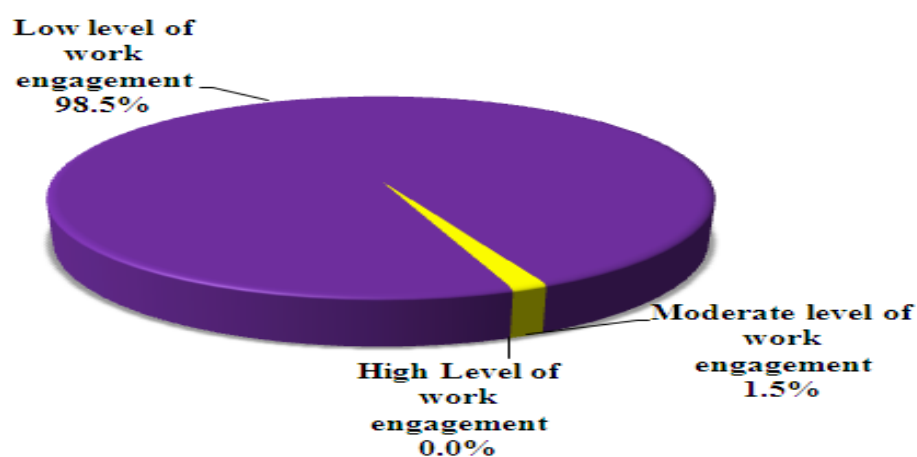
**Table (2): Over all Nurses' levels of job demands (n = 390)**

| dimension of job demands         | High Level of job demands ( $\geq 75\%$ ) |      | Moderate level of job demands (60% - <75%) |      | Low level of job demands (<60%) |      |
|----------------------------------|---|------|--|------|---------------------------------|------|
|                                  | No.                                       | %    | No.  | %    | No.                             | %    |
| Quantitative or workload demands | 253                                       | 64.9 | 112  | 28.7 | 25                              | 6.4  |
| Physical demands                 | 0   | 0.0  | 85   | 21.8 | 305                             | 78.2 |
| Emotional demands                | 7   | 1.8  | 78   | 20.0 | 305                             | 78.2 |
| Work shift demands               | 21  | 5.4  | 259  | 66.4 | 110                             | 28.2 |

**Figure (1): Levels of overall nurses' job demands**

**Table (3): Over all nurses' levels of work engagement (n = 390)**

| Subscales work engagement scale | Low level of work engagement (<60%) |      | Moderate level of work engagement (60% - <75%) |      | High Level of work engagement ( $\geq 75\%$ ) |     |
|---------------------------------|-------------------------------------|------|--|------|---|-----|
|                                 | No.                                 | %    | No.  | %    | No.   | %   |
| Physical work engagement        | 333                                 | 85.4 | 56   | 14.4 | 1   | 0.3 |
| Cognitive work engagement       | 208                                 | 53.3 | 158  | 40.5 | 24  | 6.2 |
| Emotional work engagement       | 372                                 | 95.4 | 17   | 4.4  | 1   | 0.3 |
| Behavioral work engagement      | 295                                 | 75.6 | 92   | 23.6 | 3   | 0.8 |

**Figure (2): Levels of overall nurses' work engagement (n = 390)**

**Table (4): Correlation between nurses' job demands questionnaire and nurses' work engagement scale (n = 390)**

| Job demand                 |   | Quantitative | Physical | Emotional | Night shift | Overall work engagement |
|----------------------------|---|--------------|----------|-----------|-------------|-------------------------|
| Physical work engagement   | R | 0.135*       | 0.054    | 0.148*    | 0.049       | 0.184*                  |
|                            | P | 0.007*       | 0.291    | 0.003*    | 0.331       | <0.001*                 |
| Cognitive work engagement  | R | 0.212*       | -0.016   | 0.154*    | 0.146*      | 0.220*                  |
|                            | P | <0.001*      | 0.753    | 0.002*    | 0.004*      | <0.001*                 |
| Emotional work engagement  | R | -0.088       | 0.011    | -0.085    | -0.089      | -0.108*                 |
|                            | P | 0.083        | 0.821    | 0.095     | 0.078       | 0.034*                  |
| Behavioral work engagement | R | 0.024        | 0.022    | -0.037    | 0.034       | 0.019                   |
|                            | P | 0.643        | 0.661    | 0.461     | 0.509       | 0.702                   |
| Overall job demands        | R | 0.117*       | 0.035    | 0.068     | 0.050       | 0.128*                  |
|                            | P | 0.021*       | 0.490    | 0.183     | 0.328       | 0.011*                  |

## Discussion

Intensive care units are a highly stressful environment intensive care is a complex and difficult unit to high number of health care workers, especially nurses. Working in ICU cause fatigue and work stress that cause negative organizational impacts such as job dissatisfaction, decreased work performance, rapid turnover, deteriorated quality of service provision and work disengagement among nurses.

Finding of current study showed that that more than half of nurses had a moderate level of overall job demands. These findings may be interpreted due to that two thirds of nurses are young and had years of experience less than five years that can make them unable to deal with Job demands in ICUs. Additionally, the stressful nature of the intensive care unit work environment as well as nurses exposed to workload during work shifts considered as a stressor for nurses that increase job demands. The same result was found by **Kan and Suar (2018)** who informed that the level of job demands for the nurses in the ICUs was moderate. Also, **Elewa and El Banan (2020)** on their study reported that there is a high level of job demands in ICUs. In contrary the current study results disagreed with **Shamkh et al. (2021)** who confirmed that about three quarters of nurses have a low level of job demands among nurses.

Present study staff nurses showed the majority of nurses had low level of

overall work engagement. These findings may be interpreted due to that two thirds of nurses are young and have had years of experience, less than five years that can make them unable to deal and engaged with working in ICUs and also may be due to job demands including workload and work shift demands. These findings supported by **Alhozi et al. (2021)** According to their survey, most intensive care unit nurses describe feeling overwhelmed by their workload and always under pressure to satisfy patient requests.

The findings of the presents study exposed statistically significance correlation among overall job burden and overall work engagement. This means that job demands have an effect on staff nurses work engagement. In line with the result of this study, **Canadas et al. (2020)** whose study the relationships among nurses' perceived over-qualification, work engagement and job stressors. They found a significant and positive relationship among job demands and engagement.

According to the outcomes of this study, a correlation among workload and engagement exists. According to **Yamada et al. (2019)**, nurses' capacity to stay engaged is often hindered by variables such as an increasing workload and a poor work environment.

## Conclusion

Overall, the job demands were moderate for over half of the nurses. And most nurses weren't really invested in what they did for a living. Among

critical care unit nurses, there was a statistically significant correlation among job demands and work engagement.

### Recommendations

The current results lead us to propose the following changes:

#### Hospital management

Make sure that nurses have access to ongoing education and training programs that address the challenges they face on the job and provide strategies for overcoming them.

- Make available tools to meet the challenges of the job.
  - Head nurses and staff nurses should participate in regular training programs that focus on the importance of physical, mental, emotional, and behavioral involvement in the workplace.
  - Establishing an ideal work setting that encourages and supports staff nurses, allowing them to reach their full potential and beyond.
- Nursing group meetings should be held on a regular basis by head nurses in order to express, revitalize, and encourage social and peer engagement.
- Create supportive working conditions to encourage nurses' trust, empathy and mutual regard.
  - Organize nursing group to enhance verbalizing, vitalizing and supporting peer and social interactions.
  - Develop more comprehensive program's staff nurses, offer help as well as support to improve their concentration,

contribution and vitality in working, in order to increase their work engagement. Both undergraduate and postgraduate nursing education programs must modify their curricula to emphasize competencies in emotional intelligence and work engagement.

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