

## Impact of Job Characteristics on Nurses' Critical Psychological States at Assiut University Hospital

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### Abstract:

**Introduction:** Today the focus is shifting toward broadening the responsibilities of the organization's jobs and encouraging employees not to limit themselves on what is written on their job descriptions (*Shilpa. et al, 2013*).

**Aims:** Identify the extent to which the nurses' job have skill variety, task identity, task significance, autonomy and feedback, Find out the extent of intensive care units nurses' psychological states in terms of meaningfulness of work, responsibility for outcomes and knowledge of work results. Determine the effect of job characteristics of ICU nurses on their critical psychological states.

**Study design:** A descriptive correlational design was used.

**Setting:** The study was conducted at Main Assiut University Hospital.

**Subject and Method:** The subject of the study was all bedside nurses working in the Intensive Care Units at Main Assiut University Hospital (159). A self – administered questionnaire was used to collect data which includes: Personal data sheet, Work Design Questionnaire, and Critical Psychological States Questionnaire.

**Results:** Core job characteristics of (I.C.U)s nurses are significantly associated with their critical psychological states.

**Conclusion:** Activities performed by nurses have high core job characteristics and nurses perceived high critical psychological states.

**Recommendations:** organizations system should include information about the importance of job characteristics in improving nurses' critical psychological states.

**Keywords:** Job characteristics, Critical psychological states, Nurses

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### I. Introduction:

The Job Characteristics Model (JCM) is a normative approach to job enrichment (**Parker, 2014**). The beliefs of this approach are that the characteristics of a job lead to critical psychological states which lead to personal and work outcomes (**Batchelor, et al., 2014**).

The core job characteristics are skill variety, task identity, task significance, autonomy, and feedback. Critical psychological states are “experienced meaningfulness of work”, “experienced responsibility for outcomes or work,” and “knowledge of results.” Personal and work outcomes are high internal work motivation, high quality work performance, high satisfaction with work, and low absenteeism and turnover (**Shani & AnandKumar, 2011 and Batchelor, et al., 2014**).

**Michailidis & Dracou, (2011)** assume that managers must create the three critical psychological states to achieve employee motivation and high levels of service quality. They commented that the first and most important psychological state of an employee is one where employees feel that their work is meaningful. The second psychological state is when employees feel that they are responsible for their own work and need to receive feedback on their work. The third psychological state focuses on feedback. Feedback provides employees with an understanding of how well they are performing their jobs and meeting employer expectations cited in (**Leblanc, 2013**).

Research shows that out of these three psychological states, experienced meaningfulness is the most important for employee attitudes and behaviors, and it is the key mechanism through which the five core job dimensions operate (**Sorsa, 2017**).

### Significance of the study

Little is known about job characteristics and its effects on employee critical psychological states. Unfortunately, there is a lack of researches related to work design generally. However poor or unsuccessful

design of a job will lead to lower productivity, employee turnover, absenteeism, complaints, unionization, and resignations. For these reasons the researcher conducts this study in an attempt to assess job characteristics and its impact on critical psychological states among intensive care units nurses at Assiut University Hospital.

### **Aims of the study**

#### ***The present study aims to:***

- a- Identify the extent to which the nurses' jobs have skill variety, task identity, task significance, autonomy and feedback.
- b- Find out the extent of intensive care units nurses' psychological states in terms of meaningfulness of work, responsibility for outcomes and knowledge of work results.
- c- Determine the effect of job characteristics of ICU nurses on their critical psychological states.

### **Research Hypotheses**

- There is a positive relationship between job characteristics and critical psychological states.

### **Subject and method:**

#### **I. Technical design :**

Included the research design, setting, subject, and data collection tools.

#### **Research design:**

The present study was done using a descriptive correlational research design.

#### **Study setting:**

The present study was conducted in five intensive care units at the Main Assiut University Hospital.

#### **Study subject:**

Total number of nurses working as bedside nurses in the I.C.U.s at Main Assiut University Hospital was (159) nurses, categorized as follows (42 ) in General intensive care unit,(42)in Trauma intensive care unit,(20)in Post-operative intensive care unit,(41)in Chest intensive care unit and (14)in Medical intensive care unit.

## **II. Study tools:**

Data of this study was collected with the following tools:

### **I. Personal characteristics data sheet:**

Designed to collect data about nurses as; age, educational qualification, years of experience and specialty of ICU.

### **II. The Work Design Questionnaire (WDQ):**

It is a self-administered questionnaire that was established by **Morgeson &Humphrey, (2006)** and translated by the researcher. It was used to determine the five core job characteristics for nurses working at ICUs, which including 23 items: skill variety (3 items), task identity (3 items), task significance (3 items), autonomy (9 items), and feedback (4 items).

#### **Scoring system:**

The nurses' response was rated on a 3-point Likert scale ranging from little scored (1), moderate scored (2) and much scored (3).The scores to each of the 23 items was calculated giving the total core job characteristics score. A cut point at score 23 indicated little core job characteristics, score from 24 to 46 indicated moderate core job characteristics and score from 47 to 69 indicated high core job characteristics.

### **III. Critical Psychological States Questionnaire:**

It is a structured questionnaire that was used to measure the critical psychological states for nurses working at ICUs and included two parts:

**First part:** It was developed by **Karsten (2008)** and translated into Arabic by the researcher. It included 12 items used to measure meaningful work.

**Second part:** It was developed by **McKnight (1997)** and translated into Arabic by the researcher. Included 3 items were used to measure nurses' responsibility for work outcome and 3 items were used to measure nurses' knowledge of the work results.

#### **Scoring system:**

The subject's responses were rated on a 3-point Likert scale ranging from little scored (1), moderate scored (2) and much scored (3).The scores of each group of items were summed up giving the mean score of each domain, and then the subject's responses to each of the 18 items was summed up to give the total critical psychological states mean score. A cut point at score 18 indicated that they had a little critical psychological states, score from 19 to 36 indicated that they had a moderate critical psychological states and score from 37 to 54 indicated that they had a high critical psychological states.

**2. Administrative design:**

An official approval had been attained to collect necessary data from director of the Main Assiut University Hospital, heads and head nurses of I.C.U.s at Main Assiut University Hospital.

**3. Operational design:**

**A) Preparatory phase.**

- This phase took about four months from July to October 2016 to review the literatures regarding the topic of the study and to translate the study tools.
- The study tools were translated into Arabic using the translate-re-translate process. It's validity was measured by five experts in Nursing Administration reviewed the study tools (Three Professors and one Assistant Professor of Nursing Administration, and one Professor of Community Nursing at Assiut University), and the required modifications were done before the actual data gathering to make it more clear to the participants of the study.

**B) Ethical consideration:**

- The study proposal approved from the Ethical Committee in Faculty of Nursing - Assiut University.
- The study subject has ethical right to participate, withdraw or refuse participation in the study.
- Oral agreement was obtained from nurses who participated in the study at I.C.U.s.
- Confidentiality and anonymity were assured which achieved when the study participants' privacy considered during collection of data.

**C) Pilot Study.**

- A pilot study was done on 10% of the study participants (20 nurses) to test time estimation and applicability of the questionnaires. It took about two weeks of November 2016. Participants included in the pilot study were included in the study subject because there are no modifications needed.
- Data collected from pilot study were analyzed and computerized for the reliability of study tool using Cronbach's Alpha coefficient statistical method. It clarified that  $\alpha$ -coefficient for core job characteristics was 0.82%, critical psychological states 0.81%.

**D) Field work:**

- The researcher collected data through personal interview of each nurse to explain the purpose of the study. After obtaining oral consent from the nurses participated in the study, the study tools (questionnaires) was administered to the participants to fill it and the researcher responded on all the questions of the nurses about the questionnaire, each participant took about (30) minutes to fill the questionnaires, duration of this phase took about 3 months from November 2016 to January 2017.

**4-Statistical design:**

- Collected data were verified prior to computerized data entry and analysis by using statistical software package for social sciences (SPSS) version 20. Data were presented as number and percentages, mean and standard deviations were calculated. Spearman was used. Statistical significant was considered at P- value  $\leq$  0.05.

**III. Results:**

**Table (1): Personal characteristics of studied nurses (N=159).**

Personal characteristics	No. (n= 159)	Percent %
<b>Age: (years)</b>		
19 – 22	51	32.1
23 – 26	<b>56</b>	<b>35.2</b>
> 26	52	32.7
<b>Mean <math>\pm</math> SD (Range)</b>	25.69 $\pm$ 4.76 (19.0 – 42.0)	
<b>Department:</b>		
Medical ICU	14	8.8
Post operative ICU	20	12.6
Chest ICU	41	25.8
General ICU	<b>42</b>	<b>26.4</b>
Trauma ICU	<b>42</b>	<b>26.4</b>
<b>Years of experience:</b>		
< 2	61	38.4
2 – 5	36	22.6
> 5	<b>62</b>	<b>39.0</b>
<b>Mean <math>\pm</math> SD (Range)</b>	5.61 $\pm$ 5.77 (1 month - 25 years)	
<b>Educational qualification:</b>		

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Secondary School of Nursing	78	49.1
Technical Health Institute	22	13.8
Technical Institute of Nursing	43	27.0
Bachelor degree of Nursing Science	16	10.1

**Table (2): Core job characteristics dimensions as reported by studied nurses (N=159).**

Core job characteristics	Much		Moderate		Little	
	No.	%	No.	%	No.	%
<b>Skill Variety:</b>						
1. The job needs a variety of abilities.	132	83.0	26	16.4	1	0.6
2. The job needs me to apply a variation of different skills to complete the work.	124	78.0	35	22.0	0	0.0
3. The job necessitates me to practice a number of complex or high-level skills.	60	37.7	84	52.8	15	9.4
<b>Mean ± SD (Range)</b>	7.89 ± 0.99 (5.0 - 9.0)					
<b>Maximum score</b>	9					
<b>Task Identity:</b>						
4. The job includes finishing a part of work that has a recognizable start and end.	102	64.2	55	34.6	2	1.3
5. The job is organized so that I can do a complete portion of work from start to end.	106	66.7	46	28.9	7	4.4
6. The job lets me to complete work I start.	82	51.6	66	41.5	11	6.9
<b>Mean ± SD (Range)</b>	7.70 ± 1.15 (4.0 - 9.0)					
<b>Maximum score</b>	9					
<b>Task Significance:</b>						
7. The outcomes of my work significantly affect the lives of other individuals.	129	81.1	27	17.0	3	1.9
8. The job itself is very significant and essential in the broader structure of things.	104	65.4	50	31.4	5	3.1
9. The job has a great impression on people outside the hospital.	66	41.5	77	48.4	16	10.1
10. The work done on the job has a considerable impact on individuals outside the organization.	67	42.1	79	49.7	13	8.2
<b>Mean ± SD (Range)</b>	10.07 ± 1.46 (6.0 - 12.0)					
<b>Maximum score</b>	12					
<b>Autonomy</b>						
1. The job lets me to make my own judgments about how to timetable my work.	33	20.8	72	45.3	54	34.0
2. The job lets me to decide on the direction in which things are accomplished on the job.	59	37.1	72	45.3	28	17.6
3. The job lets me to design how I do my work.	67	42.1	71	44.7	21	13.2
4. The job provides me a chance to use my own inventiveness or decision in accomplishing the work.	36	22.6	96	60.4	27	17.0
5. The job lets me make a lot of decisions by myself.	41	25.8	74	46.5	44	27.7
6. The job offers me with major independence in decision making.	36	22.6	74	46.5	49	30.8
7. The job lets me make decisions about what techniques I use to complete my work.	37	23.3	83	52.2	39	24.5
8. The job provides me with great opportunity for independence in how I do the work.	68	42.8	67	42.1	24	15.1
9. The job gives me the opportunity to independently decide how to do my work	62	39.0	79	49.7	18	11.3
<b>Mean ± SD (Range)</b>	18.85 ± 4.05 (9.0 - 26.0)					
<b>Maximum score</b>	27					
<b>Feedback:</b>						
10. The work activities themselves deliver direct and clear data about the effectiveness (e.g., quality and quantity) of my job performance.	58	36.5	91	57.2	10	6.3
11. The job itself offers feedback on my performance.	64	40.3	73	45.9	22	13.8
12. I obtain excessive information from my director and coworkers about my job performance.	66	41.5	76	47.8	17	10.7
13. Other people in the hospital, such as administrators and coworkers, provide information about the effectiveness of my job performance.	54	34.0	78	49.1	27	17.0
<b>Mean ± SD (Range)</b>	9.04 ± 1.83 (4.0 - 12.0)					
<b>Maximum score</b>	12					
<b>Mean ± SD (Range) for total job characteristics</b>	<b>53.55±6.25</b>					

**Table (3): Critical psychological states as reported by studied nurses working in the ICUs at Assiut Main University Hospital (N=159).**

Critical psychological states	Study subject's responses					
	Much		Moderate		Little	
	No.	%	No.	%	No.	%
<b>Experienced Meaningful of the Work:</b>						
I believe the result of my work significantly affect the lives or well-being of people.	112	70.4	42	26.4	5	3.1
I feel that the most of the things I do on my job gives me a sense of accomplishment	104	65.4	48	30.2	7	4.4

My work contribution is special.	99	62.3	56	35.2	4	2.5
I believe my job is important.	<b>132</b>	<b>83.0</b>	26	16.4	1	.6
I am using my talents to add value to people's lives	109	68.6	48	30.2	2	1.3
I feel that I am useful and needed	111	69.8	41	25.8	7	4.4
I am able to make a difference every day	72	45.3	80	50.3	7	4.4
I feel a sense of pride and or accomplishment as a result of the type of work that I do	102	64.2	46	28.9	11	6.9
I find my work creates learning opportunities for me.	95	59.7	61	38.4	3	1.9
I find my work is interesting	78	49.1	60	37.7	<b>21</b>	<b>13.2</b>
I feel that I am accomplishing something worthwhile at work.	107	67.3	48	30.2	4	2.5
I find my work challenging.	79	49.7	63	39.6	17	10.7
<b>Mean ± SD (Range)</b>	30.99 ± 3.70 (18.0 - 36.0)					
<b>Maximum score</b>	36					
<b>Experienced Responsibility for Outcomes of the Work:</b>	<b>Much</b>		<b>Moderate</b>		<b>Little</b>	
13. I feel a high degree of personal responsibility for the work I do on this job.	<b>136</b>	<b>85.5</b>	20	12.6	3	1.9
14. Whether or not this job gets done- and done properly- is clearly my responsibility.	110	69.2	40	25.2	<b>9</b>	<b>5.7</b>
15. I feel I should personally take responsibility for the results of my work on this job.	127	79.9	29	18.2	3	1.9
<b>Mean ± SD (Range)</b>	8.25 ± 1.07 (3.0 - 9.0)					
<b>Maximum score</b>	9					
<b>Critical psychological states</b>	<b>Study subject responses</b>					
	<b>Much</b>		<b>Moderate</b>		<b>Little</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
<b>Knowledge of the Actual Results of the Work Activities:</b>						
16. I usually know whether or not my work is satisfactory on this job.	63	39.6	77	48.4	<b>19</b>	<b>11.9</b>
17. I have a pretty good idea of how I am performing my work	65	40.9	88	55.3	6	3.8
18. I can generally tell whether I am doing well or poorly in this job.	<b>69</b>	<b>43.4</b>	81	50.9	9	5.7
<b>Mean ± SD (Range)</b>	7.03 ± 1.35 (3.0 - 9.0)					
<b>Maximum score</b>	9					
<b>Mean ± SD (Range) of the overall critical psychological states</b>	<b>46.26±4.63 (31 - 54)</b>					
<b>Maximum score for overall critical psychological states</b>	<b>54</b>					

Table (4): Correlation between scores of core job characteristics dimensions and critical psychological states of studied nurses working in the ICUs at Assiut Main University Hospital (N=159).

Core job characteristics		Critical psychological states		
		Knowledge of the Actual Results of the Work Activities	Experienced Responsibility for Outcomes of the Work	Experienced Meaningful of the Work
Skill variety	R	0.089	<b>0.254</b>	<b>0.268</b>
	P	0.263	<b>0.001**</b>	<b>0.001**</b>
Task identity	R	0.094	0.106	0.023
	P	0.237	0.185	0.774
Task significance	R	<b>0.176</b>	<b>0.299</b>	<b>0.215</b>
	P	<b>0.027*</b>	<b>0.000**</b>	<b>0.006**</b>
Autonomy	R	<b>0.368</b>	0.073	<b>0.236</b>
	P	<b>0.000**</b>	0.360	<b>0.003**</b>
Feedback	R	<b>0.289</b>	0.147	<b>0.200</b>
	P	<b>0.000**</b>	0.064	<b>0.012*</b>

(\*\*) High statistically significant at ( $p < 0.01$ )

(\*) Statistical significant ( $P < 0.05$ )

**Table (1)** Explained Personal characteristics of studied nurses, which displayed that nearly to half of them were graduated from Secondary School of Nursing (49.1%). More than one- third of them their experience exceeded 5 years and their age ranged from 23 to 26 years old (39% and 35.2%) respectively. More than one quarter of them were working at general ICU and trauma ICU (26.4% and 26.4%) respectively.

**Table (2)** showed the core job characteristics dimensions as described by the studied nurses. Concerning **skill variety**, the majority of the studied nurses (**83.0%**) stated that their jobs require a variety of abilities. Meanwhile, only (**9.4%**) considering that their job needs a little number of hard or high-level skills.

Concerning **task identity**, a high percent of the studied nurses (**66.7 %**) reported that their jobs are prepared to do a complete portion of work from start to end. Alternatively, only (**6.9%**) reported the job giving them little opportunity to complete work they start.

As for **task significance**, the majority of the studied nurses (**81.1 %**) reported that the outcome of their work significantly affecting the lives of other individuals. While, only (**10.1%**) mentioned that the job has a little impression on people outside the hospital.

Regarding **autonomy**, less than half of the studied nurses (**42.8%**) stated that their jobs give them great opportunity for independence in how they do the work. Meanwhile, about one third of them (**34.0%**) reported that the job giving them little chance to make their own decisions about how to timetable their work.

As regards to **feedback**, less than half of the studied nurses (**41.5%**) stated that they take enough information from their director and colleagues about their job performance. Alternatively, only (**17.0 %**) reported that other individuals in the hospital, such as directors and colleagues, give little information about the effectiveness of their job performance. The mean score for all core job characteristics was high compared with the maximum score.

Critical psychological states as perceived by studied nurses depicted in **table (3)** showed that, as regard to **Experienced Meaningful of the Work** the majority of the studied nurses (**83.0%**) believed that their job is very important. Alternatively, only (**13.2%**) did not find that their work is interesting. Concerning **Experienced Responsibility for Outcomes of the Work** the majority of the studied nurses (**85.5%**) feel a high degree of personal responsibility for the work they do. Meanwhile, only (**5.7%**) feel little responsibility whether or not the job gets done- and done properly. As for **Knowledge of the Actual Results of the Work Activities** below half of the studied nurses (**43.4%**) can generally tell whether they are doing well or poorly in their job. Alternatively, only (**11.9%**) reported that they rarely know whether or not their work is satisfactory on the job. The study subject reported high mean scores of experienced meaningful of the work, experienced responsibility for outcomes of the work, and knowledge of results, also the mean score for all critical psychological states dimensions was high (46.26) compared with the maximum score (54).

The correlation between core job characteristics and critical psychological states of studied nurses showed in **table (4)**. It was found that there were highly significant positive correlations between **skill variety** and **experienced responsibility for outcomes of the work** and **experienced meaningful of the work** (**0.001\*\*** and **0.001\*\***) respectively. Regarding **task significance**, there were significant positive correlations with **knowledge of the actual results of the work activities**, **experienced responsibility for outcomes of the work**, and **experienced meaningful of the work** (**0.027\***, **0.000\*\*** and **0.006\*\***) respectively. Concerning **autonomy** there were highly significant positive correlations with **knowledge of the actual results of the work activities**, and **experienced meaningful of the work** (**0.000\*\*** and **0.003\*\***) respectively. As for **feedback** there were significant positive correlations with **knowledge of the actual results of the work activities**, and **experienced meaningful of the work** (**0.000\*\*** and **0.012\***) respectively.

#### **Discussion:**

The job characteristics were designed to identify worker perception about job characteristic deficiencies (**Michailidis & Dracou, 2011**). This study was done with the aim of identifying the extent to which the nurses' jobs have skill variety, task identity, task significance, autonomy and feedback, assess the nurses' critical psychological states, and identifying the effect of job characteristics on nurses critical psychological states.

The findings of the present study showed that, about two thirds of the studied subject had less than 5 years of experience and their age ranged from 19 to 26 years old, this might be because of the system followed by Assiut University Hospital as they transfer old age nurses every five years from intensive care units to general units, and below half of them were graduated from secondary school of nursing **Table (1)**.

**Table (2):** The present study found high mean scores of the entire core job characteristics for the studied subject. It may be because of the dynamic working environment in intensive care units which require the nurse to have high skill variety, task identity, task significance, autonomy and feedback. This finding was consistent with the result of **Alini, et al., (2014)** in his study which indicated that all job characteristics dimensions had high mean score. This contradicted with the study results of **Gabr & Mohamed, (2012)** who found that nurses had moderate or low mean score in perceiving their job characteristics.

Moreover, regarding the critical psychological states, the current study found that the nurses reported high mean score for experienced meaningful of the work, experienced responsibility of work and knowledge of the actual results of the work activities **Table (3)**. This may be due to nurses feeling that their job is very important and affects the lives of others. Also, they are utilizing the case method of patient care delivery system, which enables them to be responsible of some particular patients, giving those patients total and comprehensive care, know the results of their work performance and be accountable for their work. This was consistent with the study findings of **Mohamed, (2004)**, which indicated high mean score for the three critical psychological states dimensions for professional and technical nurses utilizing the case method of assignment in the (ICUs).

According to the model certain core job characteristics are responsible for each psychological state: skill variety, task identity, and task significance shape the experienced meaningfulness; autonomy affects experienced responsibility, and feedback contributes to the knowledge of the actual results of the work activities

(Wikipedia, 2016). In the present study **table (4)** there was highly significant positive correlation between **skill variety** and experienced responsibility for outcomes of the work and experienced meaningful of the work. **Task significance** had significant positive correlation with the three critical psychological states. **Autonomy and feedback** had significant positive correlation with knowledge of results, and experienced meaningful of the work. This was contradicted with **Hossam, (2009)** and **Michailidis & Dracou, (2011)** who found that the meaningfulness psychological state is directly affected by skill variety, task identity, and task significance while autonomy affects the responsibility psychological state. Feedback is related to the knowledge of the actual results of the work activities psychological state. However **Ayanyinka & Pius, (2014)** stated that the core job characteristics could significantly predict the three psychological states. Although, according to **Piccolo, et al., (2010)**, autonomy in combination with task significance may particularly influence the experienced meaningfulness of the work.

#### IV. Conclusion

*In the light of the present study findings, the following conclusions can be drawn as:*

- Below half of the intensive care units nurses were graduated from secondary school of nursing, had more than 5 years of experience and their age ranged from 23 to 26 years old.
- The intensive care units nurses' jobs have high skill variety, task identity, task significance, autonomy and feedback.
- Nurses perceived high critical psychological states in terms of meaningfulness of work, responsibility for work outcomes and knowledge of work results.
- Core job characteristics of (I.C.U.s) nurses are significantly associated with their critical psychological states.

#### V. Recommendations

*According to the findings of the present study, the researcher suggested the following recommendations:*

- 1- Organizations system should include information and experiences opportunities about job design models and its importance.
- 2- Continues meetings between nurse managers and nurses should be conducted to discuss their experiences, interests and views of their job.
- 3- Improving the payment system for nurses at Assiut University Hospitals to deal with their dissatisfaction.
- 4- Improving ICUs nurses salary and incentives to commensurate with the work nature.
- 5- Applying nursing career ladder in the health organizations.
- 6- Maintain two ways of communication between nurse managers and nurses to exchange their experiences, interests and views of their job.

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