Effect of Organizational and Personal Characteristics on Nurses' Innovation Behavior

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Background: Innovation is being considered by health organizations as an essential approach for effectiveness and competitiveness. Many factors have been displayed to be basis for supporting an organizational innovative behavior as organizational and personal characteristics. **Aim:** To determine the effect of organizational and personal characteristics on nurses' innovation behavior. **Subjects and Method**: **Design:** A descriptive correlational design was used. **Tools**: Three tools were used for data collection; Organizational characteristics scale, personal characteristics scale, and nurses' innovation behavior scale. **Subject:** Convenient nurses' sample (N=175) who work in ICUs, medical, surgical and orthopedic departments at Main Assiut University Hospital. **Results**: Showed that the highest mean score in organizational characteristics subscales was related to work discretion (**6.48 ±17.41**) while lowest was related to rewards/reinforcement (**3.77± 9.57**). The highest mean score in personal characteristics subscales was related to proactivity (**7.63±20.87**). There were highly statistically significance positive correlations between nurses' innovation behavior and organizational and personal characteristics subscales. There were statistically significance positive correlations between age and time availability, management support, and rewards/ reinforcement. Also, a highly statistically significance positive correlations between years of experience and time availability and creative efficacy and between work settings and rewards/reinforcement and innovation behavior **Conclusion**: more than two third of studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level, and slightly less than half of them perceived their organizational characteristics as satisfactory level. **Recommendations:** Nursing Managers should develop strategies to create the organizational culture for increasing innovation behavior among nurses particularly in enhancing management support for innovation, policy makers should support innovation as a job requirement, and develop polices for improvement nurses knowledge through; continuing education and training professional development.

Keywords: *Organizational. Personal, Characteristics, Nurse Innovation Behavior*

Introduction

Innovation has become the base of growth and competitiveness in the global. Nurses face extraordinary challenges in the present-day health care environment. They are essential component of the health care setting and have the capability to deliver innovative solutions to improve quality of patients care. As a result of fast paced changes in health care, and the challenges that face professional nurses, innovation is required for the progress of nursing practice and organizational success. So encouraging innovation and creativity behaviors among nurses in health care setting is essential for improving health care [1, 2 and 3].

Innovation is highly required for nursing practice in promoting health, reducing risk factors for health conditions, avoiding diseases, refining attitudes toward the healthy life, and enhancing the treatment strategies and procedures economy, it contains; the transformation of knowledge and ideas into a benefit which may be for profitable or for the public good; the benefit may be new or improved processes or services. Innovation in healthcare defined as new something or perceived new by the population experiencing the innovation that has the potential to create change and redefine healthcare's economic and social potential. This definition provides groundwork to study nursing innovation among nurses [4, 5, and 6].

Personals characteristics are those abilities which be present in human beings and which differentiate them from others. It is a psychological process that affects personal in obtaining, consuming and receiving goods and services as well as experience. Every person has diverse characteristics which renders its personality and which supports him toward several features of human behavior including; learning, performance and innovation. Also every person has different type of behavior and he acts according to his own awareness, perception and shows behavior which he takes for himself. It is keep changing and it can be learned at any time and any place .It includes **proactivity and creative efficacy**; *proactivity* is the comparatively steady leaning for a person to take action to influence his or her environment and create change. And *creative efficacy* is the self-awareness of one's capability to be creative. Efficaciously creative people have a strong self-efficacy level for their creative potential [7, 8, and 9].

Personal work behavior is the behavior of personal that aims to accomplish of the initiation of new and useful ideas, processes, and services or procedures

related to their work. It also refers to performing tasks beyond organizational routines that have been comprised by the members of an organization. Nurses' innovation behavior (NIB) defined as behavior from nurses toward developing new services, developing new marketplaces, and improving the methods of providing services in their nursing organization. Innovative initiatives are extensively contribute to organizational success. Innovation behavior as everything from changing routines or making use of new preparations, to simplifying labor, to refining the service provided to being able to provide the recent new offers based on foregoing research in innovation behavior. NIB will be used as an outcome measure to examine the innovation behavior of nurses and how innovation behavior relates to organizational and personal characteristics [10, 11, and 12].

Organizational characteristics are features initiating from the management model implemented by the Organization, through its arrangement and it is values expresses in the nature of its membership and relations. Organization not only chart representation and job descriptions and instead, refers to the "complex pattern of communication and relationships in a group of employees". The acquirement of knowledge in the organization widely based on its structure, knowledge storage on its membership attribute, knowledge diffusion on its relationship pattern, and knowledge application on its policy [13, 14]. Organizational characteristics linked with innovation includes four categories' *Management support;* is the readiness to simplify and support innovation behavior including the encouraging of innovative ideas and providing the resources necessary to take innovative actions. *Work discretion;* is the managers' obligation to tolerate failure, offer decision-making without unnecessary oversight, and to delegate authority and responsibility. *Rewards and reinforcement* mean developing and using systems that reward according to performance, highlight important accomplishments, and motivate pursuit of challenging work and *time availability* is assessing jobs to make sure that individuals and groups have the time necessary to pursue innovation and that their works are structured in ways that support efforts to attain short and long-term organizational goals [15, 16].

Significance of the study

Innovation has the potential to enhance nurses' performance; the vital role of personal and organizational characteristics can increase the capability of organization nurses' to innovate. Also, possession of positive personal and organizational

characteristics provides the organization with the essential components to innovation. Personal' and organizational characteristics can encourage or discourage a diversity of behaviors and decisions, including those linked to innovation. So, the researchers conducted this study in an attempt to determine the effect of organizational and personal characteristics on NIB.

Aim of the study

To determine the effect of organizational and personal characteristics on NIB.

Specific objectives

1. To determine nurses' perception levels regarding personal and organizational characteristics and their innovation behavior.

2. Explore relationship between nurses' perception regarding to organizational and personal characteristics and their innovation behavior.

Research Questions

1. What are nurses' perceptions levels regarding to organizational and personal characteristics and their innovation behavior?

2. Are there relations between nurses' perception regarding to personal and organizational characteristics and their innovation behavior?

Subjects and Method

I-Technical design

Study design: A descriptive, correlational study design was used.

Setting: The study was carried out at Main Assiut University Hospital in intensive care units, medical, surgical and orthopedic departments.

Study Duration: The present study took about one year from June 2020 until May 2021.

Subjects: A convenient sample of (175) staff nurses from the previously selected study setting was used. The following groups have been established: (42) nursing secondary school diploma, (89) nursing technical institute, (38) Bachelor of nursing, and (6) Master of nursing; (40) of them work in ICUs, (28) in Medical Departments, (63) in Surgical Departments, and (44) in Orthopedic Departments

Tools: Three tools were used for data collection.

First **tool**: This scale measure only organizational characteristics, adapted with due acknowledgement from *Paula (2011)* [17], it contained 19 items and four subscales; work discretion (7) items, time availability (4) items, management support (5) items and rewards/reinforcement (3) items. The responses were rated using a five point Likert Scale, " were 1 = strongly disagree and went up to 5 = strongly agree". The sums of the scores in the four

subscales were combined to create organizational characteristics.

Second tool: personal characteristics scale developed by *Seibert et al.* [18]*,* it contained 10 items and two subscales; creative efficacy (3) items, centered on nurses' views that they can be creative in their work roles. Proactivity (7) items, A 5-point Likert Scale was used to set up the replies, scoring rated from strongly disagree to strongly agree". Scoring accordingly from one to five respectively. The sums of the scores in the two subscales were combined to create personals characteristics.

Third Tool: The NIB scale was established by *Yesil & Sozbilir* [19]*,* it contained 12 items and was used to assess NIB. It was 5- Likert Scale, (never, rarely, neutral, occasionally and always) scoring accordingly from one to five respectively.

The scores of each scale were summed up and then converted into a percent score. A score of 60% or higher was considered as "satisfactory" and low if less than 60% and considered "un satisfactory"

In addition to the socio demographic characteristics of studied nurses was selected by the researchers. It mainly reflected the individual differences amongst the studied nurses. Such as, (age, gender, marital status, educational level, years of experience, and work settings)

Validity the study tools

The study tools were assessed by seven experts from faculty of nursing representative (three professors, one assistant professor and three lecturers) in the field of education from administration departments at Assiut and Quena Universities (face validity through a jury).

II-Administrative Design

An formal approval to carry out the study was obtained from the responsible authorities. The researchers met departments' managers to clarify the aim of the study, to gain their approval and support, as well as organizing and arranging the participants based on their work on each department.

III-Operational Design

It includes preparatory phase, pilot study, and data collection.

Preparatory phase: Started at the beginning of June 2020 to the end of July 2020. It includes reviewing related national and international literatures. Tools were translated into Arabic and retranslated into English for correctness.

-Pilot study

A pilot study were conducted on a sample of 10 % of study participants that included (18 nurse) before starting actual data collection to test the applicability and the simplicity of the study tools and to estimate the time necessary to response it. This ranged between about 20–30 min. It

also assisted to test the feasibility and suitability of the study settings. Data gained from the pilot study were analyzed; no alterations were done so the nurses' participated in the pilot study were included in the study sample.

Reliability: It evaluated in a pilot study by measuring their internal consistency using Cronbach'salpha were (α= 0.876) for organizational characteristics questionnaire, (α= 0.805) for personal characteristics questionnaire and (α = 0. 0.869) for NIB, thus demonstrating a high degree of reliability.

Data collection

After warranting the applicability and the clarity of the study tools:

1- Data collection took about two months (started in August 2020 and ended in September 2020)

2- The researchers met with participants and explained to them the purpose of the study and they were requested for oral consent to share in this study; then,

3- The researchers distributed the questionnaire form to them individually, and in groups, with directives about how to fill them.

4- One of the researchers existed all the time with studied nurses for any clarification.

5- Data were collected in different shifts according to work schedule of each unit.

6- The filled questionnaire were collected in time and reviewed to check their totality to avoid any missing data.

Ethical consideration: Research proposal was approved by the nursing administration department and ethical committee in the Faculty of Nursing at Assiut University, Egypt, there is no risk for the study subjects during application of the research**.** Oral agreement was taken from studied nurses. Confidentiality of collected information and privacy of the participants was assured and participants have the right to reject to share or drawing from the study without any rational at any time.

Statistical design

Data were gathered, and fed into computer for analysis and presentation. Date entry and data analysis were done using SPSS version 18 Program (Statistical Package for Social Science). Data were presented using descriptive statistics in the form of frequencies and percentages. Also minimum, maximum, mean, standard deviation and Alpha for scales was calculated. Correlation between variables (spearman correlation) were used statistical significance was considered at P-value ≤0.05 and highly statistical significance was considered at P-value ≤0.01.

Results

Table (1): Demonstrates distribution of studied nurses according to their socio demographic characteristics: The data in this table illustrated that the studied nurses were 175, about **(57.7)** of them had their age from 20 to30 years. More than two third of them **(72.0)** were females. More than half of them **(59.4)** were married, about **(59.4)** of them have had children, slightly more than half of them **(50.9)** have had nursing technical institute, slightly more than half of them **(52.0)** had more than 10 years of experience in nursing and about (**36.0**) of them were working in surgical units.

Figure: (1): Reveals nurses perceptions levels regarding to organizational and personal characteristics and NIB. The figure showed that more than two third of the studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level (88.0%, 86.3%) respectively. It was observed that, slightly less than half (45.1%) of them perceived their organizational characteristics as satisfactory level and about (86.3%) of them perceived their innovation behavior as unsatisfactory level.

Table (2): Explores mean scores and standard deviation of studied nurses' perception regarding organizational and personal characteristics and NIB scale and subscales. In relation to **organizational characteristics subscales**. It was observed that the highest mean score was related to work discretion (**17.4114**) **±6.47913**) while lowest was related to rewards/reinforcement (**9.5657**)± **3.77301**). It was observed that in relation to **personal characteristics** the highest mean score was related to proactivity (**20.8743**) **±7.63282**).
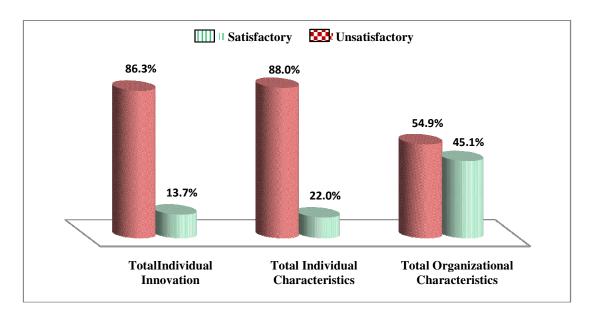
Table (3): Displays the correlation between nurse's perceptions of organizational and personal characteristics and NIB. It was observed that there were a highly statistically significant positive correlations between NIB and work discretion, time availability**,** rewards/reinforcement, total organizational characteristics, creative efficacy and proactivity with P value=000 for all and (R= **.356****, **.346****, **.270****,.421**,**.332**** and.**433****) respectively. Also there was statistically significance positive correlation between NIB and management support with (P value=.030and R=**.164***).

Table (4): The correlations between organizational and personal characteristics, NIB and socio demographic characteristics of studied nurses. It was found that there were statistically significance positive correlations between age and time availability, management support, and rewards/reinforcement with (P value= **0.048***, **0.047*** and **0.029***) respectively, between NIB and work settings and between creative efficacy and years of experience with (P value= **0.031*** and **0.032***) respectively**.** Also there were highly statistically significance positive correlations between years of experience and time availability with (P value= **0.003****) and between rewards/

reinforcement and work settings with **(P value= 0.001**).** The data in table also showed that there were no statistically significance correlations between organizational characteristics, personal characteristics and NIB and gender or education level.

Table (1): Distribution of Studied Nurses According to their Socio Demographic characteristics (n=175)

Variable	No.(n=175)	%
▪ **Age group**		
20-30 years	101	**57.7**
31-40 years	52	29.7
> 40 years	22	12.6
▪ **Gender**		
Male	49	28.0
Female	126	**72.0**
▪ **Marital Status**		
Not married	71	40.6
Married	104	**59.4**
If you married, did you have children?		
Yes	104	**59.4**
No	71	40.6
▪ **Education level**		
Secondary school of Nursing **d**iploma	42	24.0
Nursing Technical Institute	89	**50.9**
Bachelor of Nursing	38	21.7
Master in Nursing	6	3.4
▪ **Years of experience**		
< 5	52	29.7
5 – 10	32	18.3
> 10	91	**52.0**
▪ **Work settings**		
ICUs	40	22.9
Medical	28	16.0
Surgical	63	**36.0**
Orthopedic	44	25.1

Figure: (1): Nurses perceptions levels regarding to organizational and personal characteristics and NIB **(n =175)**.

Table (2): Mean Scores and Standard Deviation of Studied Nurses' Perception Regarding Organizational and Personal Characteristics and thier Innovation Behavior Scale and Subscales(n=**175**).

Item	N	Minim um	Maxim um	Mean	Std. Deviation
Organizational characteristics					
Work discretion (7) item	175	7.00	35.00	**17.4114**	**6.47913**
Time availability (4) item	175	4.00	19.00	10.7600	3.81160
Management support (5) item	175	5.00	25.00	15.6457	5.04579
Rewards/reinforcement(3) item	175	3.00	15.00	**9.5657**	**3.77301**
Total	175	19.00	87.00	53.38	13.27
Personals characteristics					
Creative efficacy (3) item	175	3.00	15.00	5.7486	3.10259
Proactivity scale (10) item	175	10.00	41.00	**20.8743**	**7.63282**
Total	175	13	54	26.62	9.60
Innovation means (12) item	175	12	52	25.16	9.47

Table (3): The Correlation between Nurses Perceptions of Organizational and Personal Characteristics and NIB **(n = (175)**

Items	Nurses Innovation Behavior	
Organizational characteristics		
Work discretion	Pearson Correlation	**.356****
	Sig. (2-tailed)	.000
Time availability	Pearson Correlation	**.346****
	Sig. (2-tailed)	.000
Management support	Pearson Correlation	**.164***
	Sig. (2-tailed)	.030
Rewards/reinforcement	Pearson Correlation	**.270****
	Sig. (2-tailed)	.000
Total	Pearson Correlation	.421**
	Sig. (2-tailed)	.000
Personal characteristics		
Creative efficacy	Pearson Correlation	**.332****
	Sig. (2-tailed)	.000
Proactivity	Pearson Correlation	**.433****
	Sig. (2-tailed)	.000
Total	Pearson Correlation	.451
	Sig. (2-tailed)	.000

 *Correlation is significant at P-value ≤ 0.05 (2-tailed).
**Correlation is highly statistical significance at P-value≤0.01 (2-tailed).

Table (4): The Correlations between Organizationaland Personal Characteristics, NIB and sociodemographic Characteristics of the Studied Nurses (n = (175)

Variable	Organizational characteristics												Personal characteristics						Nurses innovation behavior		
	Work discretion			Time availability			Management support			Rewards/Reinforcement			Creative efficacy			Proactivity					
	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD	Mean	±	SD
Age (years)																					
20-30 years	17.91	±	6.47	11.35	±	3.83	15.92	±	4.55	9.78	±	3.45	5.66	±	2.76	20.56	±	7.09	26.19	±	8.59
31-40 years	17.29	±	6.58	10.13	±	3.55	16.15	±	5.40	9.98	±	4.11	6.08	±	3.52	21.69	±	8.74	24.69	±	10.37
> 40 years	15.41	±	6.12	9.55	±	3.98	13.18	±	5.84	7.59	±	3.92	5.36	±	3.59	20.36	±	7.44	21.59	±	10.55
F statistics --- p-value	1.365 ---- 0.258			3.099 --- 0.048*			3.111 --- 0.047*			3.602 ----- 0.029*			0.011 ---- 0.988			0.429 ---- 0.651			2.257 --- 0.108		
Gender																					
Male	16.04	±	6.42	10.76	±	4.03	15.94	±	5.22	9.06	±	3.91	5.08	±	3.13	19.16	±	7.76	22.37	±	7.96
Female	17.94	±	6.45	10.76	±	3.73	15.53	±	4.99	9.76	±	3.71	6.01	±	3.06	21.54	±	7.51	26.25	±	9.81
T-test ---p-value	1.01 ---0.998			1.167 ---- 0.493			4.99 ----- 0.680			1.11 ---- 0.635			6.01 ---- 0.822			1.067 ---- 0.757			1.519 ---- 0.101		
Education level																					
Nursing secondary school Diploma	17.76	±	7.54	9.90	±	3.91	14.19	±	5.72	9.07	±	4.31	5.78	±	3.25	21.07	±	7.58	23.31	±	9.50
Nursing Technical Institute	17.21	±	6.16	10.92	±	3.90	16.40	±	4.79	10.0	±	3.63	5.90	±	3.11	19.94	±	7.11	25.30	±	8.37
Bachelor of Nursing	17.45	±	6.33	11.50	±	3.52	15.76	±	4.37	8.97	±	3.44	5.63	±	2.72	21.73	±	8.18	25.68	±	10.63
Master or higher in Nursing	17.67	±	5.35	9.67	±	3.08	13.83	±	6.40	10.33	±	3.78	8.50	±	3.73	27.83	±	9.60	32.83	±	14.34

	Var 1			Var 2			Var 3			Var 4			Var 5			Var 6			Var 7		
F statistics --- p-value	0.071 ---0.975			1.380 ---- 0.250			2.134 ---0.098			1.034 ---0.378			1.539 --- 0.206			2.325 -- 0.077			1.924 ----0.128		
Years of experience																					
< 5	17.92	±	5.56	12.15	±	3.51	15.77	±	4.85	9.81	±	3.33	5.23	±	2.45	20.5	±	6.03	26.9	±	8.37
5 – 10	17.63	±	7.2	9.38	±	4.05	15.88	±	4.45	10.38	±	3.68	7.0	±	3.82	22.13	±	9.5	25.16	±	9.65
> 10	17.04	±	6.74	10.45	±	3.69	15.49	±	5.39	9.14	±	4.02	5.60	±	3.08	20.65	±	7.76	24.18	±	9.94
F statistics --- p-value	0.326 ---0.723			6.195 --0.003**			0.092 --- 0.912			1.439 --- 0.240			3.526 --- 0.032*			0.532 --- 0.588			1.371 ---- 0.256		
Work settings																					
ICUs	16.5	±	6.88	10.3	±	3.79	15.15	±	5.31	5.38	±	3.94	5.43	±	2.93	20.48	±	7.25	24.98	±	9.7
Medical units	19.18	±	6.68	11.89	±	3.80	16.32	±	4.8	9.64	±	3.0	6.11	±	2.71	21.93	±	7.65	29.93	±	9.64
urgical units	16.9	±	5.52	10.78	±	3.7	15.38	±	5.54	9.59	±	4.0	5.8	±	3.24	21.56	±	8.04	24.1	±	9.51
Orthopedic	17.84	±	7.18	10.43	±	3.97	16.05	±	4.23	9.39	±	3.86	5.73	±	3.36	19.59	±	7.4	23.84	±	8.39
F statistics --- p-value	1.158 --- 0.327			1.129 ---0.339			0.444 ---0.722			11.667 – 0.001**			0.269 --- 0.847			.796 ---0.497			3.024 ---0.031*		

*Significant at P-value ≤ 0.05.   **Highly statistically significance at P-value≤0.01.

Discussion

Based on the perspective that the organizational and personal characteristics of the workforce have influence for attitudes and innovative behaviors at the individual and group levels *Danilo et al., (2018)* [20]. In this descriptive study we have focused upon determine the effect of organizational and personal characteristics on NIB. The subjects of study were 175 staff nurses from ICUs units, medical, surgical and orthopedic departments at Main Assiut University Hospital. Data was collected using organizational characteristics, personal characteristics, and NIB and socio demographic characteristics of studied nurses.

According to result in Figure 1 the majority of studied muses perceived their personal characteristics and their innovation behavior as unsatisfactory level, and slightly less than half of them perceived their organizational characteristics as satisfactory level. This in contrast with *Xerri, (2013)* [21] mentioned that nurses have the ability to bring about innovative changes, and they have an influence on the success of their organizations innovation but, the development of internal climate supportive of muses innovation, a helpful director, honesty to new ideas, and the recompensing of respectable work are

consider the key retention strategies for innovation. In relation to mean scores and standard deviation of studied nurses' perception regarding to organizational characteristics was positive and proved that studied nurses perceived that their organization own the characteristics that support innovation behavior **(table 2).** This confirmed by *Afsar and Badir., (2017)* [22]*,* who stated that organizational characteristics have an essential influence on the extent of innovation in an organization. In the same context *Tang(, (2017)* [23] mentioned that innovation is affected by factors both external to and internal to organizations characteristics and asserted that organizations having sustainable innovation ability are those that have a better understanding the environmental driving forces, and are able to target their innovative efforts more effectively.

The results in **table (2)** showed that the work discretion had the highest mean score. This may due to that the nursing management at Main Assiut University Hospital, provide support for nurses and reinforce them. In agreement with this study result *Chen et al.., (2018)* [24]*,* found that studied nurses rated work discretion as positive.

As declared by the study results that the rewards/reinforcement had the lowest mean score **(table 2).** This may due to those nurses at Main Assiut University Hospital perceived that reward in their work place unfair and not commensurate with their responsibility. In contrast *Malik. Butt, (2015)* [25]*,* emphasized that the rewards/reinforcement and motivating nurses are essential to raise new ideas and to develop their creativity behavior at part with national and international requirements. Also *Lukes and Stephan,(2015* [26] mentioned that the innovator needs to support his/ her idea as the innovation goes along with changes and opposition to change and the developer of the innovation will have to generate obligation for the innovation and often build unions.

Regarding to mean scores and standard deviation of studied nurses' perception regarding to personal characteristics was positive **(table 2)**, these results proven that personal characteristics contributing to NIB. This result was supported by *Chombunchoo,(2016)* [27]*,* who stated that personal characteristics influence the innovation and consider one of the essential components of the innovation process.

As regard to mean scores and standard deviation of personal characteristics

subscale the study results discovered that the highest mean score was related to proactivity **(table 2)**. This result was agreed with *Crant* [28]*,(2018*) who found that proactivity was significantly linked to greater levels of innovation and it is the utmost important forecaster of innovation and creativity**.**

The result of the present study revealed that there were highly statistically significance positive correlations between NIB and organizational characteristics scale and subscales; work discretion, time availability and rewards/reinforcement **(Table 3)**. These study result was confirmed by *Steiber and Alange, (2018*) [29]*,* who found that there were positively relationship between management support, work discretion, and rewards/reinforcement to the level of corporate innovation within the organizations. Also, *Fawzia & Mervat, (2018*) [30] concluded that there was a significant association between nurses' awareness related to organization values and their innovative work behavior.

According to, Zammuto and Griffith, (2016) [31]*,* organizational characteristics of management support and rewards/ reinforcement are important to encouraging nurses' innovation and that innovators must find ways to sell the uniqueness and importance of new ideas to

prevent negative responses or conflicts. Also, ***Baumann. and Stieglitz,(2014)*** [32] asserted that natural rewards can help people to build pleasant and enjoyable features into individual daily activities. Moreover, ***Ivana et al,(2016)*** [33]asserted that rewards play an important role to moderate the relationship between personal characteristics and NIB.

As depicted by study results there were statistically significance positive correlations betweenNIB and management support **(Table 3**). This result agrees with, ***Scott and Bruce, (2017)*** [34]*,* they found that there was statistically significance positive correlation between support for innovation from management and it is expectations for innovation with personal innovative behavior. In the same line ***Bjornali et al,(2012*** [35] pointed that to involve nurses in innovative behavior;, awareness about innovation, and nurses managers support are considered as one of the significant potential impacts on innovation behavior and it is crucial to generating a supportive environment and providing sufficient resources

Also*, Akram et al,(2017)* [36]found that lack of leader support will decrease a new ideas approval to others, and, getting political support from leaders is important to idea promotion and innovations and co-workers are influenced to validate, accept and use them, and leaders are influenced to approve them. In addition ***Zhang,(2020)***[37] asserted that the better understanding of the innovation process within organizations by nurse manager will generate the necessary knowledge to direct management interventions for the effective and efficient use of available resources for health care delivery.

Result in **(Table 5**) stated that there were highly statistically significance positive correlations between NIB and personal characteristics subscales, creative efficacy and proactivity. This finding was in accordance with***Madjar et al.(2011)*** [38]emphasized that innovation is the effective application of creative ideas within an organization and stated that creativity by employees and groups is the initial point for innovation, In addition, ***Parker and Collins(2014)*** [39]emphasized that proactive trait that brings positive consequences for people and organization includes innovative behavior among the nurses such as taking responsibility and voice. Proactive personality is important in confirming the innovativeness of the nurses as an individual. NIB was considered as proactive work behavior enabling proactive action to make a difference especially when it comes to idea accomplishment.

In addition, *Antoncic,(2013)* [40]examined the relationship among proactive personality, demographic data and entrepreneurial intention. His results showed that a proactive personality was the highest and an important forecaster of innovative intention and proactivity was positively linked to nurses' innovation and innovation has a positive influence on career progression and *Manam, (2016)*[41]found that there were positive correlation between proactive personality and innovation behavior.

Based on the results of the present study it was found that there were statistically significance positive correlations between age and time availability, management support, and rewards/reinforcement (**Table 4**).This my explained by the fact that older nurses have more understanding of work and life, they able to better time management, anticipating and solving problems quickly through their experience and proficient ability set consequent in the awareness of more time availability and they have more rewards and management support. This result in contrast with *Paula(2011)* [17]found that no statistically significance relation between organizational characteristics and nurses' years of experience in work setting, and age.

There were highly statistically significance positive correlations between years of experience and time availability and creative efficacy (**Table 4**). This may be due to that nurses when have more years of experience have more knowledge and skills and become able to generate new idea that support innovation behavior. This finding consistent with *Bayus, (2016)* [42]who stated that innovation is the produce of creative ideas and increase creativity among employees is crucial for institution to be able to foster innovation behaviors and emphasized that innovation increase with experience

Lastly, there were statistically significance positive correlation between work settings and rewards/reinforcement and NIB. This result supported by *Kim and Shin, (2015)* [43], who found that employees were to respond more innovatively when they perceived their efforts were equally rewarded by the institution, and emphasized that workplace environment has an influence on innovation. *Also, Bos-Nehles,(2017) and Tastan., (2019)* [44, 45] emphasized that an innovative values could lead to crucial interest in the nursing practice by nontraditional candidates who are involved to innovation opportunities and attracting and retaining high performing nurses is more probable when

institution support them in applying creative, innovative ideas.

Conclusion

Based on the results of the study findings, it was concluded that

-More than two third of studied nurses perceived their personal characteristics and innovation behavior as unsatisfactory level and slightly less than half of them perceived their organizational characteristics as satisfactory level.

-The highest mean score in organizational characteristics was related to work discretion while, lowest was related to rewards/reinforcement. The highest mean score in individual characteristics subscales was related to proactivity.

- There was highly statistically significance positive correlations between NIB and organizational characteristics subscales; work discretion, time availability, management support; and rewards/reinforcement. There was statistically significance positive correlation between NIB and management support.

- There were highly statistically significance positive correlations between NIB and personal characteristics subscales; creative efficacy and proactivity

- There were statistically significance positive correlations between age and time availability, management support, and rewards/reinforcement in organizational characteristics

-There were highly statistically significance positive correlations between years of experience and time availability and creative efficacy- and between work settings and rewards/reinforcement and NIB.

- Work discretion, time availability, management support, rewards/ reinforcement, creative efficacy, proactivity, work settings, age and years of experience were factors significantly associated with NIB while, gender and education level did not significantly associate with perceived innovation behavior.

- The study declared the relationship between individual characteristics, organizational characteristics, and NIB among nurses.

Recommendations

1. Policy makers at Main Assuit University Hospital should support innovation as a job requirement and developing the internal positive work environment to support muses innovation, to encouraging new ideas and to reward good work

2. Authorities personnel at Main Assuit University Hospital should develop polices for improvement of nurse's knowledge and creativity through; continuing education and training professional development.

3. Nurse Managers should respond completely and support innovative effort of nurses through, providing then with time and resources to conduct innovative ideas.

4. Nurse Managers should develop strategies to create the organizational culture for growing innovation behaviors among nurses and improve management support for innovation.

5. Forthcoming studies can be directed to analysis the relationship between personal and organizational characteristics and nurses' innovation behavior.

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