

Impact of innovative work behavior educational program for nurse managers on their work engagement

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ABSTRACT

Background: In the rapid changing environment, organizations are facing greater challenges, which increase the importance to promote innovative behaviors to deliver their services, and to stay competitive. The ability to create innovative behavior at work is depending on knowledge and experience of individuals, which is used to solve new problems and generate new ideas.

Aim: To examine the impact of innovative work behavior educational program for nurse managers on their work engagement at Cairo -University Teaching Hospital .

Methods: Quasi – experimental design was utilized in this study. Convenient sample of nurse managers who working at selected six intensive care units. Study was carried out in the intensive care units at New ElKasr ElAiny Teaching Hospital Three tools were used for data collection: Innovative work behavior knowledge questionnaire consisted of two part (personal characteristics data (6 items), Innovative work behavior knowledge questionnaire(25items),Innovative work behavior observational check list(49 items),and Work engagement questionnaire(17items) .

Results: There were a statistical significant difference in total knowledge test scores ($F=135.931, P=.0001$), as well as in mean scores of total innovative work behavior skills ($F=658.3, P=.0001$) among nurse managers during different periods of assessment. A statistical significant difference in work engagement total mean scores ($F=57.107, P=.0001$).As well, statistically significant positive correlation were found in immediate post program implementation period and three months post program implementation period between innovative work behavior total knowledge, total skills with total work engagement scores.

Conclusion: The study concluded that educational program has effectively improved nurse managers' innovative work behavior knowledge and skills, as well as impact on their work engagement level positively

Keywords: Innovative work behavior, Nurse managers, Work engagement.

BACKGROUND

Innovation became a must for growth with rapid advancements in technology and communications aspects over the past few decades, the old concepts of factor of comparative advantage which focused on inputs such as labor ,and resources are outmoded for today's global economy(Blank, &Steve, 2019).Employees' innovative behavior in the workplace is considered an essential prerequisite for organizational survival. As well as innovation and innovative behaviors have become increasingly important because of the changing economic environment, globalization and growing competing demands.(Melhem, Zeffane, &Albaity, 2018)

It has been proved that nurses constitute a large body of skillful health care providers. Therefore, hospitals are faced with achieving constantly higher quality patient Outcomes, while having growing economic limits. Studies of organizations with high-performance propose that success is achieved when engaged staff proactively solves problems of their own performance (Moreira, Gherman, & Sousa, 2017)

Work engagement is referred to as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption. Vigor is defined as high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication is defined as a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption as the last dimension of engagement is defined. as being fully concentrated and deeply

engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Knight, Patterson, Dawson, Brown ,2017).

Regarding the influence of employees' work engagement on their innovative behavior, in addition to knowledge and skills, employees with high work engagement have strong perseverance and tend to prefer challenging work ,also high work engagement prompts an individual to become flexible , seek problem-solving methods and realize new ideas . Work engagement positively correlates with innovative work behavior, creating a virtuous circle, where one feeds the other(Karavasilis,2019).

Significance of the study: Employees' creativity and innovation have been recognized as important and significant performance outcomes by nurse managers and nurses as they enable organizations to adjust the shifting environmental conditions and take advantage of opportunities they have .Furthermore, the health care organizations recognize nurses as an important member to patient safety and quality and also acknowledge the importance of nursing innovation to meet future challenges and to be able to compete with other organizations (De Spiegelare, Stan; Van Gyes, Guy; De Witte, Hans; Van Hootegeem, & Geert.,2016)

From the work experience of the researcher, it was observed that nurse managers play a significant role within health care organizations but they lack opportunities to make a positive difference in work or introduce innovative ideas into work practice. So it is hoped that this innovative

work behaviors educational program for nurse managers will provide them essential principles to practice innovatively at work place, and also enhance their innovative work skills and attitude that would lead to improve their work engagement level.

This study aimed to examine the impact of innovative work behavior educational program for nurse managers on their work engagement at Cairo -University Teaching Hospital.

Research Hypotheses

H1: There will be difference in knowledge test scores of nurse manager's innovative work behavior after the program implementation compared to before.

H2: There will be difference in innovative work behavior skills of nurse managers after program implementation compared to before . **H3:** There will be difference in level of nurse manager's work engagement after the program implementation compared to before.

MATERIAL AND METHODS

Research Design: Quasi-experimental design was utilized at this study.

Setting: The study was conducted in (6) different selected intensive and intermediate care units at New Kasr ElAini Teaching Hospital which is affiliated to Cairo University . The selected ICU were ,surgical intensive care unit (16)beds , critical care unit (12) beds ,two coronary care units (8) beds for each ,and renal intermediate care unit , and intermediate cardiology care unit 2A (12) beds.

Sample: A convenient sample of (22) nurse managers completed the program were divided into (8) first line nurse manager and (14) charge nurse who accept to participate in the educational program and have baccalaureate degree of nursing and at least one year experience in nursing.

Data Collection Tools: To fulfill the aim of the study three tools were used to collect data ,and used at the three different periods of assessment times (pre, immediate ,and three months post program) as follows:

1. Innovative Work Behavior knowledge Test Questionnaire (IWB). . It was guided by Janssen (2000), and modified by the researcher . It was divided into two parts as follows: A- personal characteristic data. B- Innovative Work Behavior knowledge Test Questionnaire: It was utilized to assess the nurse managers' knowledge about concept and skills of innovative work behavior it is consisted of 25 items(15 multiple choice &10 true or false questions) . Each question was granted one point for the correct answer and zero for incorrect answer. The total scores for all questions were 25, cut point is 60%scores of(<60%) indicate low innovative work behavior knowledge ,score of (60%-74.9%)indicate moderate innovative work behavior knowledge ,and score of(>75%)indicate high innovative work behavior knowledge.
2. Innovative Work Behavior skills Observational Check List: Developed by the researcher and guided by Scott and Bruce's (1994), to assess nurse manager's innovative work behavior skills .It consisted of seven dimensions .With scoring system of 3 point Likert scale (2) Done, (1) Not Done , (0) Not Applicable ,as the total scores for all questions was (98).Cut point is

60%scores of(<60%) indicate low innovative work behavior skills ,score of (60%-74.9%)indicate moderate innovative work behavior skills ,and score of(>75%)indicate high innovative work behavior skills).

3. Work Engagement Questionnaire (UWES) . Adopted from Balducci ,Fraccaroli,& Schaufeli (2010), was used to assess the nurse managers work engagement level It includes three . It includes three dimensions subdivided into (17 items)as vigor (6 items),dedication(5 items),and absorption (6 items) The tool permission was taken from manual book of the tool from the original authors . The value of the items are on a 3 point Likert scale on work engagement level from, always (2), sometimes (1) , never (0), Cut point is 50%scores of(<50%) indicate low work engagement level ,score of (50%-74.9%)indicate moderate work engagement level ,and score of(>75%)indicate high work engagement level).

Procedures: Primary formal approval was granted from the ethical committee and then from the Vice Dean of post Graduate Studies and Research at the Faculty of Nursing - Cairo University and then from the general medical and nursing directors of the selected hospital .

Knowledge & Persuasion phase: The researcher developed the study tools based on the literature review, then tools validity, pilot study, reliability were done. The researcher met the nurse director and explained the aim of the research ,the significance and the benefits of the study on the nursing sector .The aim ,nature ,and, significance of the study were explained for every nurse managers ,to obtain their written acceptance to participate in the study.

Decision Evaluation phase: An initial assessment of the nurse manager's innovative work behavior knowledge was done using knowledge test questionnaire. Also innovative work behavior observational check list was used to measure innovative work behavior skills during their actual work time by the researcher .Every nurse manager was observed in three different .Using intermittent observations (22 nurse manager x3intermittent observation) with total 66 observations. Moreover nurse manager's were asked to fill out the work engagement questionnaire .Then the educational program schedule was arranged.

Implementation phase: The innovative work behavior educational program was carried out in 4 weeks and from 1st to the end of October 2019. The program was supposed to be 14 hours classrooms teaching and practice, the duration of each session was two hours, with total number of seven sessions. Sessions were given at the conference room at the hospital. Using power point and activities during sessions.

Conformation Phase: Evaluation of the immediate impact of educational program on nurses managers' , started from the end of the program implementation through using the same previously used tools . It was carried out in one month from 1st to the end of november2019 .

Adoption (Follow up) -To measure nurse managers' knowledge retention follow up was conducted three months after the program implementation with the same previously used tools .It was carried out in one month from 1st to the end of February 2020 . Ethical consideration

A primary approval of the ethical committee at Faculty of Nursing Cairo- University, was obtained to conduct the study. An official permission was obtained from the Medical & Nursing Director of New Kasr El Aini Teaching Hospital to conduct the study . Participation in the study was voluntary and based on the nurse managers' agreement to give informed written consent , after explaining the purpose ,nature of the study and stating the possibility to withdraw at any time .To ensure confidentiality for the participants; data will not be accessed by any other party without taking permission of the participants. The study will pose no risk for the participants. Finally a second approval of the ethical committee at the Faculty of Nursing Cairo –University was obtained.

Data Analysis: A statistical package for social science "(SPSS) Version 20. Data were used for statistical analysis of data. , parametric inferential statistics as descriptive (mean &SD) ,t-test,(ANOVA) and regression analysis were used to examine the differences between the study variables as well as analysis of variance to examine

correlations. Probability (p-value) less than 0.05 was considered significant and less than0.001 considered as highly significant.

RESULTS

Part I: Descriptive of personal characteristics of study sample

The majority of study sample (86.4%) was female, while The highest percent (45.5%)of study sample age were ranged from 25 to less than 30 years .The highest percent (63.6%) of study sample were charge nurses .That majority of study sample(90,9%) had bachelor degree in nursing . While (54.5%) of study sample had a years of experience ranged from 10-less than 15 years.

Part II: Table (1):Comparison of the total mean scores of nurse managers' innovative work behavior knowledge dimensions during different periods of assessment (pre, immediate three months post program)(N=22).

*statistically significant at p-value <0.05

IWB Knowledge Dimensions	Pre program		Immediate after program		Post three months		F	p-value
	Mean	SD	Mean	SD	Mean	SD		
Concept	0.23	0.09	0.81	0.16	0.68	0.13	108.64	.0001*
Skills	0.22	0.07	0.91	0.28	0.80	0.14	83.65	.0001*
Total	0.23	0.07	0.88	0.21	0.76	0.10	135.931	.0001*

Table (1) illustrated that there was a highly statistical significant difference in mean scores regarding innovative work behavior knowledge dimensions during different periods of assessment , which was reflected on the total mean score respectively (0.23+0.07,0.88+0.21,0.76+0.10),(F=135.93,P=.0001). A marked improvement at mean scores immediate and three months post program implementation compared to pre program.

Figure (1):Distribution of nurse managers' according total IWB knowledge levels during different periods of assessment (pre , immediate , post 3 months).

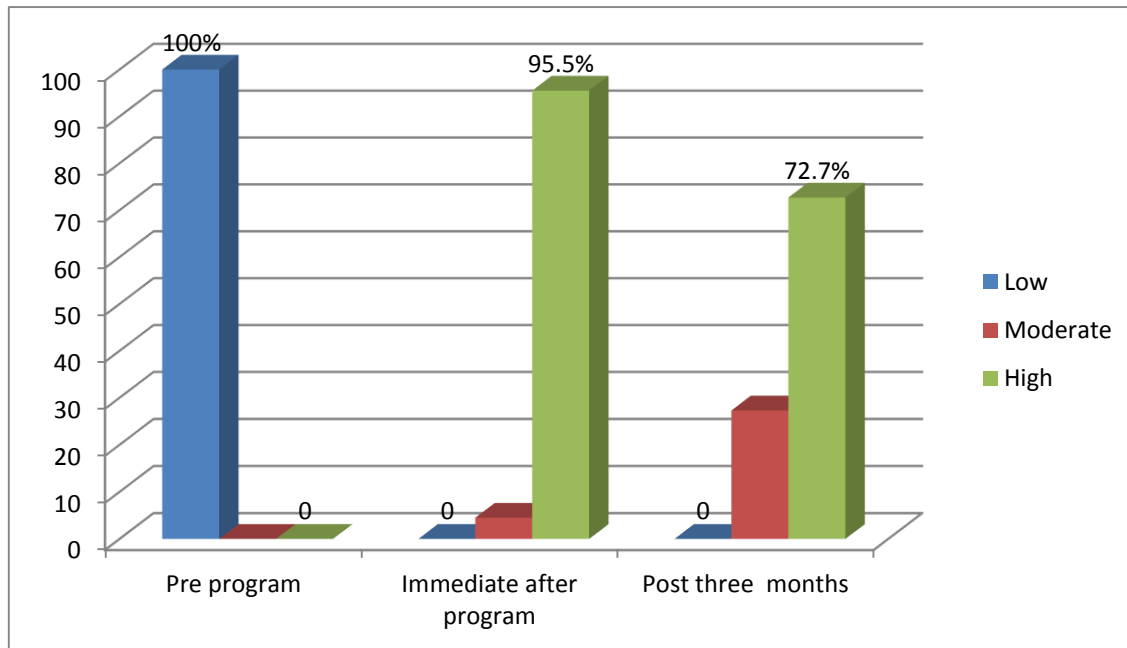


Figure (1) shows that (95.5%) of nurse managers innovative work behavior knowledge were scored high(>75%) immediately post program, the score was decreased slightly three months later as 72.7% but still high.

Table (2): Comparison of the total mean scores of nurse managers' innovative work behavior skills dimensions during different periods of assessment (pre ,immediate and three months post program) (N=22x3=66) .

*statistically significant at p-value <0.05

IWB skills dimensions	Pre program		Immediate after program		Post three months		ANOVA test	p-value
	Mean	SD	Mean	SD	Mean	SD		
Divergent thinking skill	0.30	0.37	2.62	0.17	2.27	0.38	332.145	.0001*
Risk taking & monitoring skill	0.32	0.48	3.00	0.00	2.23	0.69	92.806	.0001*
Failure tolerance skill	0.55	0.18	2.86	0.00	2.16	0.36	90.965	.0001*
Agility & flexibility skill	0.67	0.40	1.17	0.00	1.00	0.00	25.456	.0001*
Organized feedback &rewarding skill	0.75	0.64	2.40	0.14	1.10	0.15	109.913	.0001*
participative decision making skill	0.47	0.36	1.94	0.16	1.14	0.35	126.568	.0001*
Autonomy and freedom skill	0.38	0.14	2.14	0.17	1.21	0.35	296.838	.0001*
Total	0.63	0.13	2.17	0.06	1.60	0.20	658.3	.0001*

It was clear from table (2) that there was a highly statistical significant difference in mean scores of all dimensions of innovative work behavior skills during different periods of assessment. The mean scores were decreased slightly three months post program compared to immediately post program but still higher than preprogram period .

Figure (2)Nurse manager innovative work behavior skills level during different periods of assessment (pre , immediate , post 3 months) (n=22x3=66)

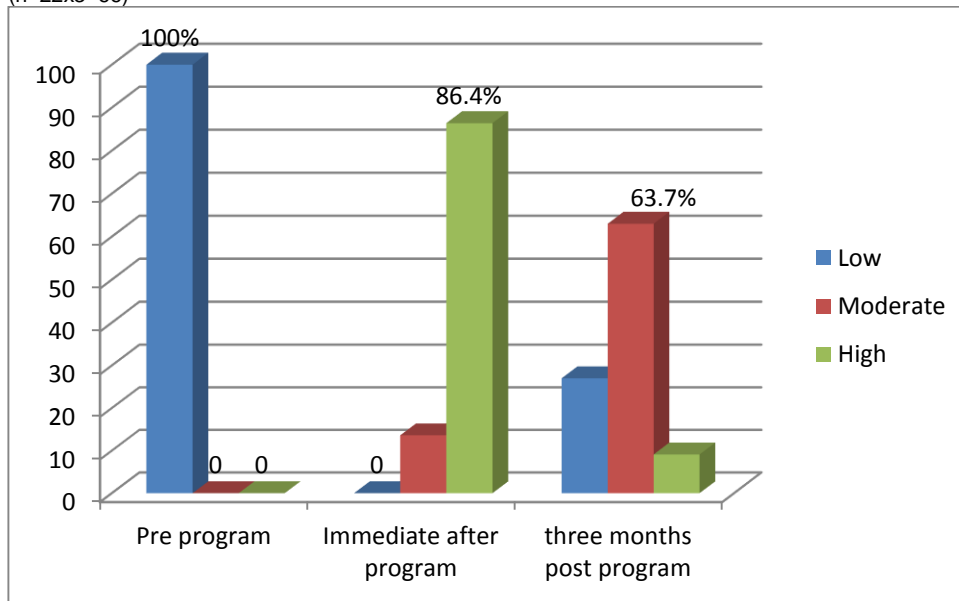


Figure (2) shows that a marked improvement was seen immediately post program as (86.4%) of nurse managers scored high (>75%) ,while nurse managers IWB skills mean scores (63.7%) of them scored moderate (60%-74.9%) .

Table (3): Comparison of mean scores of work engagement among nurse mangers during different periods of assessment(pre ,immediate and three months post program)(N=22).

*statistically significant at p-value <0.05

Work Engagement Dimensions	Pre program		Immediate after program		Post three months		F test	p-value
	Mean	SD	Mean	SD	Mean	SD		
Vigor	1.05	0.54	1.69	0.19	1.39	0.08	19.731	.0001*
Dedication	1.01	0.40	1.95	0.88	1.89	0.10	19.420	.0001*
Absorption	0.90	0.22	1.12	0.18	1.39	0.38	17.054	.0001*
Total	0.98	0.27	1.51	0.15	1.54	0.15	57.107	.0001*

Table (3) showed that there was a highly statistical significant difference in mean scores of nurse managers work engagement dimensions F=57.107,P=0.0001). An increase at mean scores of nurse managers total work engagement (1.54+0.15) three months post program implementation ,followed by slight decrease at mean scores (1.51+0.15) immediately post program ,but still higher than preprogram mean scores(0.98+0.27).

Figure (3): Work engagement levels among nurse managers during different periods of assessment (pre , immediate , post 3 months)

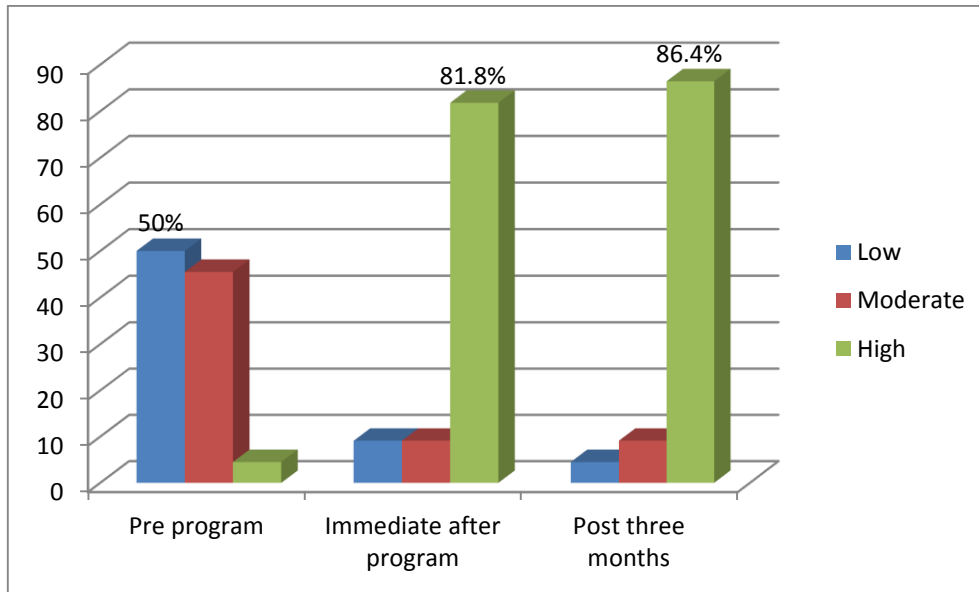


Figure (3) shows that more than half of the study sample had high work engagement level (<75%) immediate post program (86.8%) and three months post program implementation(81.8%) .

Table (4): Correlation between nurse managers' innovative work behavior total knowledge and skills and their work engagement during different period of assessment (pre ,immediately post program and three months later) (N=22)

Nurse managers' total IWB knowledge and skills	Nurse managers work engagement	
	R	P-value
Total knowledge		
Pre program	2	0.36
Immediately post program	0.40	0.05*
Three months post program	0.65	0.001*
Total IWB skills		
Pre program	0.14	0.52
Immediately post program	0.54	0.009*
Three months post program	0.52	0.01*

*Statistically significant at P-value<=0.05.

Table (4) showed that there were statistical significant positive correlation between nurse managers' total innovative work behavior knowledge and skills with work engagement immediately and three months post program implementation.

DISCUSSION

Innovative behavior among employees is critical for the long-term survival and success of an organization , this innovative behavior is beneficial for generating new ideas, which subsequently elevates their work performance (Grosse, Venkataramani, &, Labianca, 2017).

The aim of the study was to examine the impact of innovative work behavior educational program for nurse managers on their work engagement. Regarding to personal characteristics of the study sample were most of the study participants were females, also About half of the participants age ranged from 25 less than 35 years. The majority of the study participants were having bachelor degree in nursing while the least percent of them had master degree. Also all of the study sample didn't attended any educational program about innovative work behavior . .

Regarding to nurse managers' innovative work behavior knowledge, the results of the current study illustrated that the nurse managers total knowledge mean scores in the immediate and three months post program implementation were higher than the preprogram total knowledge mean scores. This might be due to applying the innovation change theory as a frame work at the educational program .The result of the current study was in agreement with Cordón-Pozo, Vidal-Salazar & José(2017),who conducted a study entitled " Innovation training and product innovation performance: the moderating role of external cooperation"and The findings suggest that the positive impact of innovation training on product innovation knowledge and performance occurs .

Also the result of the current study illustrated that there was a statistical significant difference between all dimensions of nurse managers innovative work behavior

knowledge during different periods of assessment(pre, immediate post program and three months post program implementation. This might be due to novelty of the concept, and to which extent it is essential to be practiced during their work and the importance of educational program in improving their managerial competencies. The study results were in agreement with Gunawan, Aunguroch, Fisher, McDaniel & Marzilli (2020), who indicated that the first-line nurse managers who attended management training improve their managerial competences.

Moreover, through assessing the nurse manager innovative work behavior skills revealed that a very low level pre program implementation. This result might be innovation behavior is quite a novel and unfamiliar concept in nursing field. The findings were in agreement with the findings of Le, Akkadechanunt, Chontawan (2015), who found that the majority of participants had a low level of innovation behavior.

Regarding to nurse managers innovative work behavior skills, the results showed that nurse managers total innovative work behavior skills improved both in immediate and with a slight decrease three months after implementation compared to preprogram implementation respectively. This might be due to exposure of nurse managers to the educational program content and activities.

The results of the current study were supported by AACN (2016), results who pointed that nurses work in critical areas are creative, support lifelong learning, search for information anywhere, and long run become more innovative. Moreover, the result was congruent with Stoffers, Neessen and Dorp (2015) who reported that the employees valued innovative work behavior.

The result of the current study was in contradiction with Ahmed, Ata, & Abd-Elhamid (2019) who found that slightly less than half of the participants have a high average level of innovative work behavior. Besides, the study conducted by Jung and Yoon (2018) which revealed that participants showed a moderate level of innovative behavior.

In the current study, results revealed that there was an increasing in nurse managers work engagement level immediately and three months post program implementation compared to preprogram implementation. This might be due to elevating the internal feeling of the nurse managers appreciation about themselves through their organization. As the administrative nursing department at the hospital support the content of the educational program and its content which would allow the nurse managers to be empowered and innovative. Sokrat (2020) found that employees tend to be energetic and considerably enthusiastic about their work and in result higher organization's productivity is achieved and thus the better the organization's overall performance.

This result is in agreement with Sualiman, Muhamed, & Ragheb (2019), study who found that employees Perceived Organizational Support and Perceived Supervisor Support through mediating role of work engagement positively related to Innovative Work Behavior. Moreover, Vithayaporn and Ashton (2019) the findings revealed that engagement and innovation reinforce

each other, especially an IWB influenced by an engaged employee, and an engaged employees were likely to behave innovatively. So it is a reciprocal relationship.

CONCLUSION

The study revealed an improve in innovative work behavior knowledge and skills mean scores in immediate post and three months post program implementation scores compared to preprogram mean scores. Also an improve in work engagement mean scores in immediate post and three months post program compared to preprogram implementation. As well, statistically significant positive correlation were found between innovative work behavior total knowledge and skills scores in immediate post and three months post program with total work engagement. So the research hypotheses were accepted.

Recommendations: Regarding health care organizations: Involvement of innovative work behavior program the orientation program for all the newly hired staff.

Provide adequate training and education for nurse managers at the different managerial level about innovative work behavior skills.

IWB skills must be involved at the performance appraisal for all the nursing team (managers and staff).

At research level

Future studies will be done in a different hospital setting with different sample size which can be generalized.

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Conflict of interest: None

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