GAME BASED TRAINING AND ITS EFFECT ON NURSE INTERNS' CONFLICT MANAGEMENT STYLES

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ABSTRACT

Background: Conflict in the nursing profession is normal and unavoidable, and it occurs repeatedly in healthcare settings. Nurse interns are increasingly challenged to manage conflict. As a result, conflict management is critical for their success as a health care team member. ***Aim of the study***: to assess the effect of game-based training on nurse interns' conflict management styles. ***Subjects and methods***: This one-group quasi-experimental study was conducted at faculty of nursing affiliated to Modern university for technology and information in Cairo, Egypt on 150 nurse interns. Data collection tools consisted of a knowledge questionnaire and conflict strategies inventory ***Results***: nurse interns' age ranged between 21and 24 years, 29.3% had previous conflict training and studied using game- based training. Satisfactory knowledge increased from 1.3% pre-intervention, to 100.0% , 99.3% at both post and follow-up phases respectively (p<0.001). Adequate conflict management styles rose from 21.3% pre-intervention to 98.7% and 98.0% at post and follow-up phases. ***Conclusion and recommendations***: The application of game-based training is effective in improving nursing nurse interns' knowledge related to conflict and conflict management styles. Using game-based training should be included in the educational curriculum of nursing education and practice. Further research is proposed to compare different types of gamified training interventions on nurse students' and interns' managerial skills acquisition.

Keywords: Conflict management styles, Game based training, nurse interns

INTRODUCTION

Health-care organizations are extremely complicated, with a glut of deep interdependent linkages and job ambiguity, all of which contribute to stress and conflict. Conflict is a natural condition and an inevitable reality exist in every organization where nurses interact

and work together. It is an outcome of behaviors and an integral part of human life. It may rise as a result of conflicting viewpoints, values, preferences, desires, interests, beliefs, and objectives. It is within healthcare teams, it is an ongoing and unavoidable problem *(Khalili & Pourreza, 2020).*

Healthcare conflict is a complex dysfunctional behavior in healthcare settings that affect diverse hospital human resources. 1 Healthcare conflicts range from dissimilarities to full disagreements that may lead to violence. Its negative effects include decreased quality of life, poor well-being, job dissatisfaction, decreased job performance, and increased turnover intentions among healthcare workers Moreover, healthcare conflicts can also result in poor quality of nursing care and less patient-centered care *(Alshehry, 2019).*

Conflict is the result of individual experiences or disparities of visions, goals, objectives, ideas, attitudes, and beliefs, which can be positive or negative and healthy or apathetic within the workplace environment *(Marquis & Huston, 2020).* In healthcare settings, interpersonal conflicts may arise between doctors, nurses, other healthcare workers, and patients/relatives. Conflict among healthcare workers is common and could be caused by the differences in professional values, roles, and expectations among healthcare workers *(Warsito etal., 2021).*

Conflict resolution is essential for navigating social interactions, as conflicts are inherent in human relationships. Developing effective conflict management and resolution skills enables individuals to address disagreements constructively and positively**.** However, teaching conflict resolution has proven difficult due to creating authentic learning environments and predicting how people behave in real-world conflict situations. Simulation and game-based learning scenarios have been proposed as potential solutions for teaching conflict resolution skills to both adolescents and adults as these often are designed to trigger emotions and engagement *(Yu et al., 2021; Munkvold etal.,2023)*.

Game based training emerges as an effective teaching approach as it makes the activities perceived as boring and difficult for the learner fun, provides motivation, and makes the learning process more attractive and active *(Rajab et al., 2020)*. It refers to the application of game concepts to the learning process, such as a narrative and progress tracking mechanisms, to make it more enjoyable and engaging *(Krishnamurthy et al., 2022)*. Educational games could potentially provide high-quality, inexpensive, flexible, portable, and relaxing educational services, which could increase interactions between learning materials, students, and teachers *(Gentry et al., 2019)*.

Significance of the study

Conflict management is a vital skill for nurses in current complex healthcare environment with no exception for nurse interns. They faced daily by numerous challenges while starting their career such as considerable power struggles, different role functions, scarce resources, and in most cases urgent patient issues in addition to the dynamics of time pressure and long work hours. As a

result, they have to be more knowledgeable and about the ways in which to develop effective working relationships within new or existing nursing teams or groups and acquainted with different conflict management styles to deal with various perspectives of colleagues, patients and their families. The researcher hopes that the application of game-based training in the teaching of conflict management styles will have a positive effect through stimulating students' thinking, fostering their acquisition of knowledge and mastering skills.

Aim of the study

This study aim was to assess the effect of game-based training on nurse interns' conflict management styles. It was hypothesized that the implementation of game-based training will improve nurse interns' conflict management styles

SUBJECTS AND METHODS

Research design and settings: A quasi-experimental design (one group, pre-posttest and follow up assessment was utilized in conducting this study.

The study was conducted at the Faculty of Nursing affiliated to Modern university for Technology and Information (MTI) at Cairo, as well as training sites where the nurse interns had their training including Wady El-Nile hospital, El bank El Ahly hospital, Elnas hospital, and Rofida hospital.

Subjects: The subjects of study included nurse interns. Their total number was 180 nurse interns and the sample size was calculated to demonstrate a correlation coefficient of 0.20 *(Pines et al, 2011)* or higher with 80% power and at a 95% level of confidence between the scores of conflict management and resilience. Using the sample size equation for correlation in Open-Epi software package, the required sample size was 120 which increased to 150 to account for a non-response rate of about 10%.

Data collection tools: Data collection tools consisted of a knowledge questionnaire and a Conflict Strategies Inventory

A self-administered questionnaire sheet: This questionnaire was developed by the researchers based on relevant review of literature *(Marquis and Huston, 2020).* Its aim was to assess nurse interns' knowledge related to conflict and conflict management. Had a part for nurse interns' personal characteristics as age, gender, residence, pre-university education, and previous experience with game-based training in addition to a main knowledge part. It consists of 20 MCQs that address conflict concept, causes, types, importance, process, conflict management strategies and game-based training. For scoring, each correct answer was scored one and the incorrect, zero. For each of the seven dimensions of knowledge and for the total questionnaire, the scores of the

items were summed up and converted into percentage scores. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

- ▪ ***Conflict Strategies Inventory:*** This tool was adopted by the researchers from Rahim Organizational Conflict Inventory II (ROCI II), **Rahim (2001)** for determining what strategies nurses' interns use to handle conflict. The tool has 30 items equally divide among the five conflict management styles of accommodating, collaborating, competing, compromising, and avoiding. The tool was translated into Arabic using the translation-re-translation method to ascertain its validity.

Scoring system: The responses was on a 5-point Likert scale from "1" "Strongly disagree" to "5" "Strongly agree". The total score was summed up and converted into percent, which was classified into two categories. Use of conflict management strategies was considered high if the percent score was 60% or more and low if less than 60%.

Tools' validity and reliability: the preliminary forms of the tools were submitted to seven experts in nursing administration and psychiatric and mental health nursing department. Modifications, mostly in the form of re-wording certain items, were done based on their feedback. The reliability was high (Cronbach's Alpha coefficient 0.94, 0.96) respectively for the knowledge questionnaire and conflict strategies inventory

Pilot study: a pilot study was conducted on 15 nurse interns representing 10% of the main study sample to test the clarity of language, and the practicability and applicability of the data collection tools. It also helped detect any obstacles or problems that might be encountered during the process of data collection. Since no modification was made in the tools, these students were included in the main study sample.

Fieldwork: the study was carried out through five phases, namely preliminary, planning, implementation, post-evaluation, and follow-up evaluation.

Preliminary phase: before data collection, an official approval to conduct the study was obtained through a letter addressed from the Dean of the Faculty of Nursing, Ain Shams University to the Dean of the Faculty of Nursing, Modern University for Technology and Information (MTI), and each director of the above-mentioned hospitals, to obtain permission for carrying out the study. Then, the researchers met with Dean of the Faculty of Nursing, MTI University and the Director of each hospital to explain the study maneuvers, and to get an agreement on the proposed data collection tools and training games and methods to be applied in the study.

Planning phase: the researchers started the preparation of the action plan for applying game-based training related to conflict management after reviewing related literature, articles, internet search, and textbooks. It also involved review of a number of easy applicable games that can used in classroom and training settings such as *the "I Feel" Statements Game*, *The Balloon*

Analogy, Role-Playing Scenarios and the card game" in addition to the content of the training. The action plan was validated by a jury consisting of two experts specialized in education

Implementation phase: this consisted of 11 hours divided into six teaching sessions. The first session was an introductory session and lasted for one hour. The duration of each of the remaining five sessions was two hours. Gaming method was used to applied game-based training such as earning "virtual points" for playing educational games to learn communication and conflict management skills (active listening, empathy, resilience) competing with peers on a whiteboard towards a goal by using interactive teaching, creative thinking, group work activities, group discussion, case scenarios, role play, and brainstorming. In addition, different instructional media were used such as internet, social media, videotapes, and data show. A handout including a booklet involve all the materials, games and scenarios. Different game was applied in every session. Badges were used as a visual representation of achievements that can be earned. Other gamification elements, such as rewards, progress bar, challenges, and feedback, were used either alone or along with other games mentioned above.

Post-program evaluation phase: the researchers evaluated the effect of implementing game-based training related to conflict management on nurse interns conflict management styles one month after application of the program. The tools were given to nurse interns and they were given suitable time to fill them.

Follow-up evaluation phase: Data collection was repeated three months after post intervention using the same date collection tools and processes as in post-program evaluation phase.

Administrative design and Ethical considerations: Official approval was obtained from Dean of Faculty of Nursing MTI University and hospitals' directors using official channels. An approval of the research protocol was obtained from the scientific Research Ethics Committee of the Faculty of Nursing, Ain Shams University. The aim, purpose, benefits of the study, and the impact of this study on nurse interns were explained to the Dean of the Faculty of Nursing MTI University and hospitals' directors to get their agreement. In addition, the researchers got an oral consent from each nurse intern. They were reassured about maintaining their anonymity and the confidentiality of any collected data. They were also informed that they were allowed to choose to participate or not in the study and that they had the right to withdraw from the study at any time.

Statistical analysis: Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Pearson correlation analysis was used for assessment of the inter-relationships among quantitative variables, and Spearman rank correlation for ranked ones. To identify the independent predictors of the knowledge and conflict management styles scores, multiple linear regression analysis was used and analysis of variance for the full regression models was done. Statistical significance was considered at p-value <0.05.

RESULTS

The study sample consisted of nurse interns whose age ranged between 21 and 24 years, median 23.0 years as presented in Table 1. The highest percent (74.7%) of them was males. The majority were single (91.3%) and had pre-university general education (90.0%). Slightly less than one third of them had previous experience with conflict training and game- based training (29.3%).

Table 2 demonstrates generally very low percentages of nurse interns having satisfactory knowledge at the pre-intervention phase with percentages ranging between 2.0% for conflict to 2.7% for the area of game-based training. Statistically significant improvements were revealed at the post-intervention phase (p<0.001), reaching 98.0. % for knowledge related conflict and 100% for knowledge related to game-based training. The improvements were maintained at the follow-up phase of the intervention (p<0.001) although with some minimal declines. Only 1.3% of the nurse interns had total satisfactory knowledge at the pre-intervention phase. This increased to 100.0%; 99.3% at both post and follow-up phases respectively, with statistically significant differences (p<0.001).

Table 3 indicates that low percentages of nurse interns had adequate conflict management at the pre-intervention phase. Ranging between 16% for competing style to 28% for collaborating style. The percentages of adequate conflict management significantly improved (p<0.001) at the post-intervention phase (98.0%, and at the follow-up phase of the intervention (98.0%). Overall, around one fifth (21.3%) of the nurse interns had adequate total conflict management styles at the pre-intervention phase. This significantly improved (p<0.001) to reach 98.7% at the post-intervention phase, and 98.0% at the follow-up phase of the intervention.

Table 4 points to a statistically significant strong positive correlation between nursing students' scores of knowledges and conflict management (r=0.779). Their knowledge and conflict management scores had no significant correlations with their age.

DISCUSSION

Conflict occurs when goals, expectations, and interests among individuals or groups are incompatible, causing difficulties for one or more involved parties. This seems inevitable in every institution. However, healthcare institutions, where the nature of work is highly demanding, interdependent, and stressful, are perfect places for conflicts to arise *(Saridi, 2021)*. Effective conflict management requires various skills. However, evidence suggests that nurses are unprepared to deal with conflicts at work. *(Long &Long, 2022)*. Accordingly, this study aimed to assess the effect of game-based training on nurse interns' conflict management styles. It was hypothesized that the implementation of game-based training will improve nurse interns' conflict management styles.

The study results demonstrated significant improvements in the percentages of nurse interns having satisfactory knowledge and adequate conflict management after implementation of the study intervention. The improvements were maintained throughout the 3-month follow-up. The findings lead to acceptance of the set research hypotheses.

According to the present study findings, the nurse interns had very deficient knowledge about conflict before the intervention. This might be attributed to the lack of focusing on these issues in the curricula of nursing programs, which may give more emphasis to technical skills. A similar limited level of knowledge of conflict behavior was reported in a study on re-licensure nursing students in a study in the United States *(Waite and McKinney, 2014).* The same results were found in an Egyptian study aimed to assess the effect of the training program about conflict resolution strategies on nursing students' assertiveness *(Ahmed etal., 2019).*

The application of the game-based training was associated with significant improvements in all the areas of knowledge. The results highlight the importance of such a pedagogical approach in motivating and engaging students and interns by making learning more enjoyable and interactive, with provision of immediate feedback, track progress, and reinforcement of learning. This is in agreement with the results of the study conducted by *Kim et al. (2017)* on Korean nursing students, where significant improvements in knowledge were reported. On the same line, a systematic review examining the impact of game-based learning on the knowledge of nursing students provided evidence of the benefits of this innovative learning approach on their acquisition of knowledge *(Nuno, 2022)*. Similar findings were also reported in a recent study in Spain *(Rosa-Castillo et al., 2023)*.

The results of the current study also demonstrated that the improvements in nursing students' knowledge were maintained at the three-month follow-up phase of the intervention, with very slight declines. This could be attributed to the educational approach that helps students retain the information gained through linking them to events and situations related to the process of game-based training. In congruence, previous studies found that game-based learning were highly effective in students' knowledge acquisition *(San Martín-Rodríguez et al., 2020; Kayyali et al., 2021;Ywakaim etal.,2023)*.

The present study has also investigated the effect of implementing game- based training on nurse interns' conflict management. The findings revealed that low percentages of them had adequate conflict management. This reflects their deficient background regarding these styles and is in line with their deficient pre-intervention knowledge. In fact, the study results demonstrated a strong significant positive correlation between nursing students' scores of knowledges and conflict management. This positive correlation between knowledge and conflict management has been previously documented in many studies *(AlShatarat et al., 2022; Li et al., 2022)*.

According to the current study results, nurse interns conflict management styles significantly improved at the post-intervention phase, and this persisted through the follow-up

phase. The finding could be attributed to the fact that the nurse interns learnt how to think about conflict and how to use the appropriate conflict management style to the situation and parties involved in the conflict. In agreement with this, *Munkvold et al. (2023)* who heightened engagement among participants during the game session, leading to awareness and understanding of conflict managing principles.

On the same line, *Ratu etal.,(2020)* in a study conducted on vocational high school students Indonesia, to obtain a basic concept of the conflict map, including design and source of the conflict emphasize that the game has a positive impact on one's development both personally and socially. In its development the game has a significant function in the development of culture and especially in psychological phenomena. Games can develop a person's ability to communicate, channeling pent-up emotional energy, channeling needs and desires, providing opportunities to learn things, stimulating creativity, help find moral standards, and learn to work together,

Regarding the conflict management strategies used by the nurse interns, the present study revealed that before implementation of the intervention, the most adequately used strategy was the collaboration as reported by slightly more than one quarter of them of them. At the other extreme, the competing strategy was the least used. The findings indicate that the students prefer a soothing strategy, and are less inclined to use either the negative passive strategies. The finding is in line with the results of a study in Egypt, which revealed that the nursing students were less likely to use the competing and highly used the collaborating conflict management strategies *(Ahmed et al., 2019).*

Meanwhile, at the post-intervention and follow-up phases of present study showed significant increases in all strategies positive, and negative conflict management strategies, which reflect more understanding and awareness of the conflict management styles and principles. The findings demonstrate the effectiveness of the intervention program using game based training in training nurse interns in using appropriate conflict management strategies that lead to desirable outcomes and provide true solutions for such conflicts. In congruence with the foregoing explanations, *Roman et al. (2020)* emphasized that game-based learning promotes the development of nursing skills such as teamwork and communication skills. They concluded that both simulations and serious games are effective teaching methods in nursing education.

Overall, the present study results revealed positive impacts of game-based training on nurse interns' knowledge as well as conflict management styles. The findings are in agreement with those reported in a systematic review and meta-analysis of 19 studies published between 2006 and 2017 *(Weng et al., 2018)*. It provided evidence that games had a positive effect on nursing students' learning outcomes, with improved knowledge acquisition, and cognitive and clinical skills. It also increased students' motivation and engagement in learning. Similar findings were also reported from other more recent systematic reviews and meta-analyses *(Li et al., 2022; Tavares, 2022)* with positive impacts on nursing students' knowledge, skills, and attitudes.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the utilization of game-based training in teaching conflict management is effective in improving nurse interns related knowledge and conflict management styles and this persisted through the 3-month follow-up.

The study recommends application of the game-based training/ learning in nursing education, with application of this strategy in various nursing courses, and provision of needed facilities and equipment. Further research is proposed to assess the effect of application of game-based training on nurse interns managerial skills , and to compare different types of gamified learning interventions on nurse interns performance   and skills acquisition.

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Table 1: Demographic characteristics of nurse interns in the study sample (n=150)

	Frequency	Percent
Age:		
<23	63	42.0
23+	87	58.0
Range	21-24	
Mean±SD	22.7±0.7	
Median	23.0	
Gender:		
Male	112	74.7
Female	38	25.3
Marital status:		
Single	137	91.3
Married	13	8.7
Residence:		
Urban	123	82.0
Rural	27	18.0
Unit:		
Ward	93	62.0
Critical care	57	38.0
Pre-university education:		
General	135	90.0
Technical	15	10.0
Previous work training:		
No	106	70.7
Yes	44	29.3

Previous conflict training:		
No	106	70.7
Yes	44	29.3
Studied using game-based training/learning:		
No	106	70.7
Yes	44	29.3

Table 2: Nurse interns' knowledge throughout intervention phases

Satisfactory (60%+) Knowledge of:	TIME						X^2 (p) Pre-post	X^2 (p) Pre-FU
	Pre (n=150)		Post (n=150)		FU (n=150)			
	No.	%	No.	%	No.	%		
Conflict	3	2.0	148	98.7	143	95.3	280.35 (<0.001*)	261.52 (<0.001*)
Game-based training	4	2.7	150	100.0	149	99.3	284.41 (<0.001*)	280.45 (<0.001*)
Total:								
Satisfactory	2	1.3	150	100.0	149	99.3	292.11 (<0.001*)	288.13 (<0.001*)
Unsatisfactory	148	98.7	0	0.0	1	0.7		

(*) Statistically significant at p<0.05

Table 3: Nurse interns' conflict management throughout intervention phases

Adequate (60%+) Conflict Management:	TIME						X^2 (p) Pre-post	X^2 (p) Pre-FU
	Pre (n=150)		Post (n=150)		FU (n=150)			
	No.	%	No.	%	No.	%		
Accommodating	40	26.7	147	98.0	147	98.0	162.54 (<0.001*)	162.54 (<0.001*)
Collaborating	42	28.0	147	98.0	146	97.3	157.66 (<0.001*)	154.10 (<0.001*)
Competing	24	16.0	147	98.0	147	98.0	205.75 (<0.001*)	205.75 (<0.001*)
Compromising	38	25.3	148	98.7	147	98..0	171.19 (<0.001*)	167.54 (<0.001*)
Avoiding	37	24.7	148	98.7	146	97.3	173.74 (<0.001*)	166.47 (<0.001*)
Total:								
Adequate	32	21.3	148	98.7	147	98.0	186.89 (<0.001*)	183.18 (<0.001*)
Inadequate	118	78.7	2	1.3	3	2.0		

(*) Statistically significant at p<0.05

Table 4: Correlation matrix of nurse interns' overall scores of knowledge, conflict management, and with their age

	Spearman's rank correlation coefficient	
	Knowledge	Conflict management
Knowledge	1.000	
Managerial skills	.779**	1.000
Age	-.004	.088

(*) Statistically significant at p<0.05 (**) Statistically significant at p<0.01