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Training Strategy Effect on Staff Nurses' Communication Skills

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Abstract: **Although nurses are trained to establish an effective communication, they often do not use these skills to interact with their patients in clinical environments. *Aim of study*: to investigate the effects of using a training strategy on staff nurses' communication skills. *Subjects and methods*: The study was carried out five departments of Nasser Institute Hospital using a quasi-experimental pre-post assessment design on 100 staff nurses, groups of 100 patients for observation of staff nurses' practices, and of 50 patients for soliciting their related opinions at each study phase. The tools used were a self-administered questionnaire to assess nurses' knowledge, an observation checklist to assess their practice with peers, physicians, head nurses, and patients, and an interview questionnaire for patient's opinion. The study involved assessment, planning, implementation, and evaluation phases at the end of training and three months follow-up. *Results*: Staff nurses' median age was 28.0 years, 97% were females, with 9.0 median years of experience. Statistically significant pots-intervention improvements were shown in staff nurses' knowledge and practice with all team members and patients. The study intervention was identified as a main statistically significant independent positive predictor of the knowledge and practice scores, and patients' opinions. *Conclusion and recommendations*: The intervention program is effective in improving their knowledge and practice of staff nurses' communication skills. The study recommends use of developed training module in various health care settings. Studies investigating the effect of improving staff nurses' communication skills on the quality of care and nurses' burnout and retention are suggested.**

Keywords: **Communication, skills, Staff, nurses, Knowledge, Practice.**

I. INTRODUCTION

Communication has been defined by many as the exchange of information, feelings and thoughts among people (1). Nurses convey nursing care to patients verbally (thorough speaking) and non-verbally (acting, showing, touching, doing, etc.). The information may be verbal or nonverbal; spoken or written; personal or impersonal, specific or general or even relationship oriented and so on. Interpersonal communication in nursing work is influenced by many personal as well as job factors (2).

A review of reports from the Joint Commission reveals that communication failures were implicated at the root of over 70 percent of sentinel events. When asked to select contributing factors to patient care errors, nurses cited communication issues with physicians as one of the two most highly contributing factors (3). Thus, effective communication has the potential to facilitate the nurse-patient relationship that can result in a significant impact on nursing practice, with reduction in undesirable events. Therefore, teaching communication skills to nurses improves such skills and increases patients' satisfaction in critical situations (4). Additionally, once integrated into the nurse's personal style, these skills can radically improve the efficient use of time (5).

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Most of the studies which primarily focused on communication skills enhancement involved more comprehensive training programs of greater length compared to studies focusing on clinical skills or knowledge. These programs also involved the use of intervention techniques, which are especially appropriate when targeting personal or behavioral changes, such as use of group dynamics, analysis and interpretation of interactions between participants in training, and interactive role plays with evaluation and interpretation (6). Moreover, genuine measurement and evaluation of the training outcomes is not an easy task (7). Additionally, there is a scarcity of interventions addressing the behavioral aspects of communication (8).

Significance of the study

Considering the importance of communication skills, and observing the existence deficiencies in using the skills among nurses, it is felt that there is a need to promote the communication skills of staff nurses. Therefore, this study is an attempt to examine the effect of the training on the communication skills of nurses in Nasser Institute Hospital, so that it can lead to an improvement in the communication skills between nurses and patients and other healthcare team members.

Aim of the study

The aim of this study is to investigate the effects of using a training strategy on staff nurses' communication skills through assessing staff nurses' communication skills before the training strategy, designing and implementing the training strategy, and examining the changes in staff nurses' communication skills after implementation of the strategy. The study hypothesis was that the implementation of the training strategy would lead to significant improvements of staff nurses' knowledge and communication skills with peers, physicians, head nurses, and patients.

II. SUBJECTS AND METHODS

Research design:

A quasi-experimental, pre-post assessment research design was used in carrying out the current study.

Setting:

The study was conducted at the medical, surgical, orthopedics, obstetrics, and urology departments occupying 300 beds of the total 850 beds of Nasser Institute Hospital. It is one of the largest specialized medical centers and one of the most important providers of health care services in Egypt.

Subjects:

The study subjects consisted *of* 100 staff nurses working in the setting, with the only inclusion criterion of having a minimum of one-year experience in their current units. The sample size was large enough to demonstrate an improvement in staff nurses' communication skills from an expected pretest rate of 50% adequate skills to a targeted posttest rate 75% or higher. Using the OpenEpi software package for calculation of a sample size for the difference between two proportions at 95% level of confidence and 90% study power, and accounting for a non- response rate of about 15%. Twenty nurses were recruited from each department. For each staff nurse, the practice of communication skills was be observed with the head nurse, one peer nurse, one physician, and one patient in the department. This was repeated at various phases of the study. With the exception of the head nurse, these were randomly selected from the respective categories in the department.

Data collection tools:

Two different tools were used, namely a self-administered questionnaire, and an observation checklist for their practice.

- ***Self-administered questionnaire***: This was used to assess staff nurses' knowledge regarding communication. It was in Arabic language and comprised two parts as follows.

  - *Part I*: Staff nurse's demographic and job characteristics such as age, gender, marital status, nursing qualification, working department, years of experience, and previous training in communication skills.

  - *Part II*: This was developed by the researcher based on pertinent literature ***(Hassan, 2011)*** to assess staff nurse's knowledge before and after the implementation of the training strategy. It included a mix of 21 multiple choice questions

(MCQ), 8 open-end questions, and 23 true/false questions covering the main areas of communication such as definition/role, elements, types, listening, effective communication, assertive communication, instructions, teamwork, conflict, barriers, records, and reports.

Scoring: For each question a correct response was scored 1 and the incorrect zero. The total score of each area and for the whole questionnaire was calculated by summing-up the scores of the questions and dividing the sum by the number of questions. These were then converted into percent scores. The nurse's knowledge was considered satisfactory if the percent score was 60% or higher and unsatisfactory if less than 60%.

- ***Observation checklist***: This was developed by researcher in English language based on pertinent literature ***(Hassan, 2011)*** to assess staff nurse's practice of communication before and after implementation of the training strategy. Two different versions of the tool were used, one for assessment of the communication with health team members, and the other for communication with patients.

  - *Communication with health team members*: used in assessing communication with peers, head nurse, and physicians. In addition to the identification data, it included two sections. The first was for general communication skills with 7 items such as used eye contact, spoke loudly, etc. The second was for personal communication skills with 25 items as used asked a question, ended conversation politely, got permission for delay, etc.

  - *Communication with patients (therapeutic)*: This was used in assessing staff nurse's communication skills with patients at various phases of the study. In addition to the identification data, it included two sections, one for general communication skills (10 items such as used eye contact, had good appearance, etc.), and the other for personal communication skills (25 items such as used greeted patient, said yes to patient requests, observed patient non-verbal expression, etc.).

Scoring: Each item or step of the observation checklists was to be checked as "Done", "not done" or "Not Applicable." Each item observed to be "Done" was scored 1 and zero if "not done." The total score of each area and for the whole scale was calculated by summing-up the scores of the questions and dividing the sum by the number of items. These were then converted into percent scores. The staff nurse's practice was considered adequate if the percent score was 60% or higher and inadequate if less than 60%.

Tools validity and reliability:

The developed tools were rigorously reviewed by the jury group consisting of five experts in nursing administration and psychiatric nursing for face and content validation. They assessed the tools for relevance, comprehensiveness, and applicability. The tools were revised and modified according to their comments. The reliability of the tools were tested through assessing their internal consistency. They demonstrated high levels of reliability with Spearman-Brown coefficient 0.93 for staff nurse practice with health team members, and 0.96 for the practice with patients. The tools were finalized after a pilot test was conducted on ten staff nurses.

Fieldwork:

Once official permissions were obtained, the fieldwork was started. The researcher met with the nursing director of the hospital to determine the suitable time to collect the data and confirm the days and times to implement the strategy. The study was carried out through an assessment phase to obtain baseline pretest data, a planning phase for developing the training strategy, the implementation phase, and the evaluation phase.

During the planning phase, the training strategy was developed based on the literature in addition to the identified needs from the analysis of the assessment data. The main objective was to improve staff nurses' communication skills with healthcare team members and with patients. The program consisted of two main parts. The first theoretical part covered the knowledge about communication skills as types of communication, channels, barriers of effective communication, meaning and principle of nursing records and reports, meaning and approaches of team building, meaning of assertiveness, meaning of directing, and meaning and process of a successful negotiation. The second part was practical in the form of scenarios of major communication skills such as applying principles and skills of effective communication and applying a successful negotiation process.

In the implementation phase, staff nurses were randomly divided to five groups, each consisting of 20 nurses. Two 2-hour sessions were held three days weekly. The researcher used various teaching methods to attract the attention of the attending staff nurses and motivate them to participate. The teaching methods included mini-lectures, group discussions and brainstorming. Practice sessions included role-play and group activities. The teaching media included PowerPoint presentations, handouts, and videos.

In the evaluation and follow-up phase, the effectiveness of the strategy was assessed through immediate posttest after the end of the training, and after three months for follow-up. The fieldwork was executed in 10 weeks from the beginning of March till May 2019. The strategy was implemented in six sessions for a total of 12 hours; 10 hours for theory and 2 hours of practices.

Administrative Design:

An approval to conduct the study was obtained from the Faculty of Nursing at Ain-Shams University, and from Nasser Institute Hospital Director using official channels.

Ethical Considerations:

An ethical approval of the study protocol was obtained from the Research Ethics Committee at the Faculty of Nursing, Ain-Shams University. Informed verbal consents were secured from every participant (staff nurses and patients) after explanation of the study aim and procedures. All participants were assured about their right to refuse or to withdraw from the study at any time. Full anonymity and confidentiality of any obtained information was guaranteed.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Spearman-Brown coefficients were calculated to assess the reliability of the tools through their internal consistency. Qualitative categorical variables were compared using chi-square test. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent predictors of the knowledge and practice 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.

III. RESULTS

Table 1 showed that, the study sample consisted of 100 staff nurses whose age ranged between 20 and 50 years, median 28.0 years, with a great majority of females (97%) as presented in Table 1. They were all diploma nurses, with 57% having a specialty or institute diploma. Their years of experience ranged between 2 and 30, median 9.0 years. Half of them were married, and 17% had previously attended training courses in communication.

Table 2 shows that staff nurses' knowledge of communication was mostly unsatisfactory at the pre-intervention phase. This was most evident regarding effective communication, which was satisfactory in only one of them. Moreover, only 4% had satisfactory knowledge of the definition and role of communication. At the post-intervention phase, as shown in the same table, there were statistically significant improvements in staff nurses' knowledge, reaching 100% in most areas ($p<0.001$). At the follow-up phase, there were some declines mostly in the areas of effective communication, and definition/role, 28% and 53% respectively. However, the percentages of staff nurses with satisfactory knowledge remained significantly higher in comparison with the pre-intervention phase. In total, only 2% of the staff nurses were having satisfactory total knowledge at the pre-intervention phase. This increased to 100% at the post-intervention phase, with a slight decline at the follow-up phase (98%). These differences were statistically significant ($p<0.001$).

Table 3 displays, only one (1.0%) of the staff nurses in the study sample had adequate practice of general, personal, and total communication skills at the pre-intervention phase. These rose to 97%, 100%, and 100% respectively at the post-intervention phase. The follow-up phase showed some declines, down to 75% in total. All the improvements were statistically significant ($p<0.001$).

Table 4 illustrates statistically significant improvements ($p<0.001$) in staff nurses' adequate practice of general, personal, and total communication skills with physicians throughout the intervention phases. The total adequate practice increased from 3% at the pre-intervention phase, to 99% at the post-intervention phase, and 69% at the follow-up phase.

Table 5, none of the staff nurses in the study sample had adequate practice of the general communication skills and only one of the personal and total skills at the pre-intervention phase. These increased to 94%, 100%, and 100% respectively at the post-intervention phase. The follow-up phase showed some declines, down to 66% in total communication. All the improvements were statistically significant ($p<0.001$).

Table 6 indicates that only 2% of the staff nurses in the study sample had adequate practice of general, and none of personal and total communication skills with patients at the pre-intervention phase. These rose to 100% at the post-intervention phase. The follow-up phase showed some declines, down to 95% in total practice. All the improvements were statistically significant ($p<0.001$).

Table 7 demonstrates statistically significant strong positive correlations between staff nurses' knowledge and their practice of communication skills with peers, physicians, head nurses, and patients; this last being the strongest ($r=0.831$). The table also indicates statistically significant strong positive correlations among staff nurses' scores of practice of communication skills with peers, physicians, head nurses, and patients. The strongest correlation was between communication with peers and head nurses ($r=0.881$).

Table 8 demonstrates that the study intervention was the only statistically significant independent positive predictor of staff nurses' knowledge score. The model explains 85% of the variation in the knowledge score. None of the other staff nurses' characteristics had a significant influence on this score.

As for the staff nurses' score of practice of communication with peers, the table shows that the study intervention was a statistically significant independent positive predictor in addition to staff nurses' experience years and knowledge score. On the other hand, nurse age was a negative predictor. The model explains 84% of the variation in this score. Concerning staff nurses' score of practice of communication skills with physicians, the study intervention and the knowledge score were its only statistically significant independent positive predictors. The model explains 77% of the variation in this score. As regards staff nurses' score of practice of communication with head nurse, the study intervention was its main statistically significant independent positive predictor, in addition to staff nurses' experience years and knowledge score. Conversely, nurse age was a negative predictor. The model explains 80% of the variation in this score.

Lastly, the table illustrates that the study intervention was a statistically significant independent positive predictor of the staff nurses' score of practice of communication with patients, in addition to the knowledge score. The model explains 93% of the variation in this score.

Table 1: Demographic characteristics of staff nurses in the study sample (N=100)

	Frequency	Percent
Age:		
<25	27	27.0
25-	32	32.0
30+	41	41.0
Range	20.0-50.0	
Mean±SD	30.1±7.9	
Median	28.0	
Gender:		
Male	3	3.0
Female	97	97.0
Nursing qualification:		
Secondary nursing diploma	43	43.0
Specialty/institute diploma	57	57.0
Experience years:		
<5	20	20.0
5-	35	35.0

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10+	45	45.0
Range	2.0-30.0	
Mean±SD	10.8±7.1	
Median	9.0	
Marital status:		
Unmarried	50	50.0
Married	50	50.0
Previously attended training courses in communication	17	17.0

Table 2: Staff nurses' knowledge throughout the three study phases

Communication Knowledge (satisfactory: 60%+)	Time						X^2 (p-value) Pre-post	X^2 (p-value) Pre-FU
	Pre		Post		FU			
	No.	%	No.	%	No.	%		
Definition/role	4	4.0	100	100.0	53	53.0	184.62 (<0.001*)	58.91 (<0.001*)
Elements	6	6.0	100	100.0	89	89.0	177.36 (<0.001*)	138.13 (<0.001*)
Types	8	8.0	100	100.0	91	91.0	170.37 (<0.001*)	137.79 (<0.001*)
Listening	32	32.0	100	100.0	82	82.0	103.03 (<0.001*)	51.00 (<0.001*)
Effective communication	1	1.0	86	86.0	28	28.0	146.98 (<0.001*)	29.40 (<0.001*)
Assertive communication	17	17.0	91	91.0	92	92.0	110.23 (<0.001*)	113.42 (<0.001*)
Instructions	50	50.0	100	100.0	91	91.0	66.67 (<0.001*)	40.41 (<0.001*)
Teamwork	56	56.0	100	100.0	100	100.0	55.41 (<0.001*)	56.41 (<0.001*)
Conflict	13	13.0	98	98.0	73	73.0	146.27 (<0.001*)	73.44 (<0.001*)
Barriers	35	35.0	98	98.0	98	98.0	89.08 (<0.001*)	89.08 (<0.001*)
Records	27	27.0	100	100.0	98	98.0	114.96 (<0.001*)	107.54 (<0.001*)
Reports	61	61.0	100	100.0	95	95.0	48.45 (<0.001*)	33.68 (<0.001*)
Total knowledge:								
Satisfactory	2	2.0	100	100.0	98	98.0	152.16	184.32
Unsatisfactory	98	98.0	0	0.0	2	2.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 3: Staff nurses' total practice of communication skills with peers throughout the three study phases

Communication Skills	Time						X^2 (p-value) Pre-post	X^2 (p-value) Pre-FU
	Pre		Post		FU			
	No.	%	No.	%	No.	%		
General:								
Adequate	1	1.0	97	97.0	69	69.0	184.39	101.63
Inadequate	99	99.0	3	3.0	31	31.0	(<0.001*)	(<0.001*)
Personal:								
Adequate	1	1.0	100	100.0	79	79.0	196.04	126.75
Inadequate	99	99.0	0	0.0	21	21.0	(<0.001*)	(<0.001*)
Total:								
Adequate	1	1.0	100	100.0	75	75.0	196.04	116.21
Inadequate	99	99.0	0	0.0	25	25.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

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Table 4: Staff nurses' total practice of communication skills with physicians throughout the three study phases

Communication Skills	Time						X^2 (p-value) Pre-post	X^2 (p-value) Pre-FU
	Pre		Post		FU			
	No.	%	No.	%	No.	%		
General:								
Adequate	3	3.0	96	96.0	68	68.0	173.00	92.26
Inadequate	97	97.0	3	3.0	31	31.0	(<0.001*)	(<0.001*)
Personal:								
Adequate	3	3.0	100	100.0	72	72.0	188.35	101.57
Inadequate	97	97.0	0	0.0	21	21.0	(<0.001*)	(<0.001*)
Total:								
Adequate	3	3.0	99	99.0	69	69.0	184.39	94.53
Inadequate	97	97.0	0	0.0	25	25.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 5: Staff nurses' total adequate practice of communication skills with head nurses throughout the three study phases

Communication Skills	Time						X^2 (p-value) Pre-post	X^2 (p-value) Pre-FU
	Pre		Post		FU			
	No.	%	No.	%	No.	%		
General:								
Adequate	0	0.0	94	94.0	67	67.0	177.36	100.75
Inadequate	100	100.0	3	3.0	33	33.0	(<0.001*)	(<0.001*)
Personal:								
Adequate	1	1.0	100	100.0	72	72.0	196.04	108.75
Inadequate	99	99.0	0	0.0	28	28.0	(<0.001*)	(<0.001*)
Total:								
Adequate	1	1.0	100	100.0	66	66.0	196.04	94.83
Inadequate	99	99.0	0	0.0	34	34.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 6: Staff nurses' total adequate practice of communication skills with patients throughout the three study phases

Communication Skills	Time						X^2 (p-value) Pre-post	X^2 (p-value) Pre-FU
	Pre		Post		FU			
	No.	%	No.	%	No.	%		
General:								
Adequate	2	2.0	100	100.0	96	96.0	192.16	176.79
Inadequate	98	98.0	0	0.0	4	4.0	(<0.001*)	(<0.001*)
Personal:								
Adequate	0	0.0	100	100.0	96	96.0	200.00	184.62
Inadequate	100	100.0	0	0.0	4	4.0	(<0.001*)	(<0.001*)
Total:								
Adequate	0	0.0	100	100.0	95	95.0	200.00	180.95
Inadequate	100	100.0	0	0.0	5	5.0	(<0.001*)	(<0.001*)

(*) Statistically significant at p<0.05

Table 7: Correlation matrix of staff nurses' communication skills knowledge and practice scores

	Spearman's rank correlation coefficient				
	Knowledge	Communication skills practice with:			
		Peers	Physicians	Head nurse	Patients
Knowledge	1	.820**	.810**	.797**	.831**
Practice with:					

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Peers		1			
Physicians		.700**	1		
Head nurse		.881**	.713**	1	
Patients		.785**	.728**	.783**	1

(**) Statistically significant at p<0.01

Table 8: Best fitting multiple linear regression model for the knowledge and practice scores

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Knowledge							
Constant	30.05	0.96		31.181	<0.001	28.15	31.94
Intervention	48.98	1.18	0.92	41.503	<0.001	46.66	51.30
r-square=0.85 Model ANOVA: F=1722.48, p<0.001 Variables entered and excluded: age, gender, marital status qualification, experience, training courses							
Communication skills practice with peer							
Constant	33.26	6.31		5.275	<0.001	20.85	45.67
Intervention	22.16	3.22	0.42	6.883	<0.001	15.83	28.50
Age	-0.98	0.32	-0.31	3.038	0.003	-1.61	-0.34
Experience years	0.94	0.36	0.27	2.624	0.009	0.24	1.65
Knowledge score	0.51	0.06	0.51	8.369	<0.001	0.39	0.63
r-square=0.84 Model ANOVA: F=305.27, p<0.001 Variables entered and excluded: gender, qualification, marital status, training courses							
Communication skills practice with physicians							
Constant	13.85	2.54		5.449	<0.001	8.85	18.85
Intervention	21.37	3.93	0.39	5.443	<0.001	13.64	29.10
Knowledge score	0.52	0.07	0.50	7.010	<0.001	0.37	0.66
r-square=0.77 Model ANOVA: F=505.90, p<0.001 Variables entered and excluded: age, gender, marital status, qualification, experience, training courses							
Communication skills practice with head nurses							
Constant	41.38	7.20		5.748	<0.001	27.21	55.54
Intervention	25.74	3.68	0.47	7.000	<0.001	18.50	32.98
Age	-1.46	0.37	-0.45	3.963	<0.001	-2.18	-0.73
Experience years	1.56	0.41	0.43	3.801	<0.001	0.75	2.37
Knowledge score	0.45	0.07	0.44	6.539	<0.001	0.32	0.59
r-square=0.80 Model ANOVA: F=302.71, p<0.001 Variables entered and excluded: gender, marital status, qualification, training courses							
Communication skills practice with patients							
Constant	12.71	1.66		7.655	<0.001	9.45	15.98
Intervention	37.27	2.45	0.62	15.201	<0.001	32.45	42.10
Knowledge score	0.41	0.05	0.36	8.887	<0.001	0.32	0.50
r-square=0.93 Model ANOVA: F=1263.16, p<0.001 Variables entered and excluded: age, gender, marital status, qualification, experience, training courses							

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IV. DISCUSSION

The aim of this study was to investigate the effects of using a training strategy on staff nurses' communication skills through assessing staff nurses' communication skills before the training strategy; designing and implementing the training strategy; and examining the changes in staff nurses' communication skills after implementation of the strategy. The study findings indicate that staff nurses' communication skills improved, thus leading to acceptance of the set research hypothesis.

The present study results revealed almost all staff nurses were having unsatisfactory knowledge of communication at the pre-intervention phase. For instance, only one of them had satisfactory knowledge of effective communication, and a very few had satisfactory knowledge of the definition and role of communication. The finding is quite alarming given the major importance of communication in their practice, and particularly effective communication. In line with this, ***Alotaibi (2018)*** emphasized that communication is a vital element in nursing practice throughout the nursing process. Moreover, the importance of effective communication has been highlighted by ***Gasiorek and Van de Poel (2018)*** and ***Hallman and Bellury (2020)*** who underscored the importance of training nurses in communication.

The current study intervention led to significant improvements in staff nurses' knowledge of communication, and its positive effect was confirmed by multivariate analysis that identified it as the only significant independent positive predictor of its score. This could be attributed to that the training program presented knowledge information in a simple as well as comprehensive form that suited attendants' level and responded to their actual needs. The finding is in agreement with the results of studies carried out by ***Abdrbo (2017)*** and ***(Banerjee, et al., 2017)***, demonstrating the effect of implementation of a communication training program on staff nurses' knowledge. Meanwhile, the follow-up phase of the current study revealed some slight declines in staff nurses' knowledge, which indicates the importance of continuing education and refresher courses in order to boost nurses' knowledge and avoid its attrition with time, which is often reported in training interventions ***(Creary et al., 2017)***.

The present study has also addressed staff nurses' practice. The results showed that their practice of general communication with their peers, physicians, and head nurses was mostly inadequate before the intervention. This was especially noticed in their use of eye contact and gestures, showing enthusiasm, and maintaining enough distance when speaking with others. This might reflect their lack of knowledge of non-verbal communication and of body language. It might also be related to prevalent culture and society norms. In congruence with this, a study in a Saudi Arabia ***(Alshammari et al., 2019)***, clarified the role of cultural and language issues in the communication practices of healthcare providers.

The present study also revealed that staff nurses' pre-intervention practice of personal communication skills was inadequate with peers, physicians, and head nurses. Many were observed to perform negative practices as saying no to others' requests, showing embarrassment, and expressing negative feelings. These might reflect their lack of knowledge and training in communication. It could also be attributed to high workload as highlighted by ***Lapointe et al. (2018)*** in a study in the United States. Meanwhile, only very few of the present study staff nurses were observed to perform positive communication practices as explaining own situation and receiving feedback to ensure message was understood. This again indicates their lack of awareness about the elements of communication. A similar lack of feedback in communication was reported in a study in Sweden ***(Fatahi et al., 2020)***. The importance of feedback for effective inter-professional communication has been highlighted in a study in the United States ***(Lal, 2020)***.

After implementation of the present study intervention, significant improvements were shown in staff nurses' practice of general and personal communication with all three categories of the team. In agreement with this, ***Shariat et al. (2018)*** and ***Panczyk et al. (2019)*** found statistically significant improvements in staff nurses' practice of communication skills with peers following a training program. Similarly, improvements were revealed after training interventions in staff nurses' communication with physicians ***(Josgrilberg Pereira and Puggina, 2017; Nikmanesh et al., 2018)***, and with head nurses ***(Kim and Yang, 2016; Kane et al., 2019)***.

Meanwhile, the follow-up phase of the present study was associated with some declines in staff nurses' adequate practice of communication with the health care team members. This was particularly noticed in their showing of enthusiasm, which dropped in approximately a half of them. However, the levels of adequate practice were still significantly better in comparison with the baseline before the intervention. This decline is expected as a "regression to the mean" phenomenon, whereby the training effect fades by time. Hence, regular repetition of such training is a must. A similar phenomenon was observed in an online training intervention for nursing staff in the Netherlands ***(Kloos et al., 2019)***.

Overall, in the present study post-intervention phase, almost all staff nurses had adequate practice of general, personal, and total communication skills with their peers, with physicians, and with the head nurses, thus indicating a significant improvement. Such improvements are undoubtedly due to the implementation of the intervention as confirmed by multivariate regression analyses, which identified the study intervention as the main independent and significant positive predictor of all practice scores. In congruence with this, a recent systematic review provided evidence of the effectiveness and utility of training intervention in communication for nurses ***(Kerr et al., 2020)***.

Another important factor influencing the communication practice score in the present study staff nurses was their knowledge score. In fact, significant strong positive correlations were found between the knowledge and practice scores, and the multivariate analysis identified the knowledge score as a significant positive predictor of the scores of practice with peers, physicians, and head nurses. This could be attributed to the training process and teaching media utilized in the study intervention, in addition to the emphasis on practical applied training. A similar positive correlation between nurses' knowledge and practice was reported in a study in Philippines ***(Herbuela et al., 2019)***.

On the other hand, the present study revealed that staff nurses age was a significant independent negative predictor of their score of practice of communication with peers and head nurses. This might be explained by that the learning ability tends to decrease with increasing age. Moreover, the age difference between the staff nurse and her/his peer as well as with the head nurse might influence the communication process. In congruence with this, a study in China demonstrated the effect of nurses' age on their ability to learn ***(Yao et al., 2018)***.

The current study intervention was also aimed at improving staff nurses' practice of communication skills with patients. The results revealed mostly inadequate practice of the general communication, and very few of them were observed to have provided a comfortable environment to patient, introduced self, used eye contact and gestures, or showed enthusiasm. As for personal communication, none of them received feedback to ensure message was understood, and only a few repeated the received message to ensure understanding. The findings might again be attributed to deficient knowledge as well as lack of training in communication. The importance of non-verbal communication in nurse-patient interactions such as smiling, eye contact, and nurse gesturing has been shown in a study in Australia ***(James et al., 2020)***.

The implementation of the present study intervention led to significant improvements in staff nurses' practice of communication with patients. Thus, all of them received feedback to ensure message was understood, compared with none of them at the pre-intervention phase. Such improvement could be attributed to the effect of the intervention and the associated improvements in their knowledge and skills. This is supported by the finding of a significant strong positive correlation between staff nurses' knowledge and their practice of communication skills with the patients. Moreover, the multivariate analysis identified the study intervention and the knowledge score as significant independent positive predictors of their score of practice. In agreement with this, ***Norouzinia et al. (2016)*** in a study in Iran showed success of a training intervention in effecting significant improvements in nurses' practice of communication with patients. Likewise, significant post-intervention improvements in staff nurses' practice of personal communication skills with patients were reported in previous studies ***(Kenny et al., 2016; Nazari et al., 2019)***.

V. CONCLUSION AND RECOMMENDATIONS

In conclusion, the intervention program based on staff nurses' needs is effective in improving their knowledge and practice of general, personal, and therapeutic communication skills with their peers, with physicians, and head nurses, as well as with the patients. The study recommends periodic assessment of staff nurses' communication skills, development of communication skills reinforcement strategies to encourage their practice of effective communication, with compensation and more support for success. The developed training module should be applied in various health care settings. Studies investigating the effect of improving staff nurses' communication skills on the quality of care, patient outcomes and satisfaction, and staff nurses' burnout and retention are suggested.

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