

Enhancing Nursing Personnel- physicians' Communication and Collaboration: Its Effect on Nursing Productivity

Marwa A. Abo El-Naga¹, Nermin M. Eid² and Howida H. Mahfouz²

¹Nursing Director at Denshal Liver and Gastroenterology Hospital

²Nursing Administration Department, Faculty of Nursing, Benha University

E-Mail: marwaabouelnaga506@gmail.com

Abstract

Background: Background: For optimal patient care and outcomes, effective collaboration and communication between nurses and physicians are essential. This can be attained through various factors that impact nurses' productivity. The study aimed to assess the effect of enhancing nursing personnel- physicians' communication and collaboration on nursing. Design: A quasi-experimental design was utilized. Setting : The study was conducted in emergency and intensive care units (ICU) at Damanshour Medical National Institute. Subjects consisted of all available nursing personnel (52) and physicians (36). Tools of data collection five tools was used; Communication and Collaboration Knowledge Questionnaire. , Communication and Collaboration Attitude Questionnaire Communication Skills Observational Checklist. , Collaboration Skills Observational Checklist. , and Nursing productivity Questionnaire The result showed that nursing personnel(75 %)and physicians(63.9 %)had an inadequate level of knowledge in pre-program phase while in the post program(84.6,90.4%)and follow up(82.7,86.1%)their knowledge levels improved to become adequate. There was a negative attitude prevailing in the pre-program phases (71.2, 66.7 %), which shifted to a positive attitude in the post-program (78.8,83.3%) and follow-up phases(75.0,80.6%) .There was incompetent level of skills in pre-program phase(71.2 , 55.6 %) which it improved to be competent in the post program(82.7,86.1%) and follow up(80.8,83.3%) . Less than half of nursing personnel (40.4 %) had moderate level of total productivity in pre-program phase while in the post program (67.3%) and follow up(61.6%) there total productivity was improved and became high respectively. Additionally, nursing personnel had moderate level of productivity in pre-program phase while in the post program & follow up their productivity became high. The study concluded that the program effectively improved knowledge, attitude, and skills regarding collaboration and communication among participants during both the post-program and follow-up, as well as in the productivity of nursing personnel. During both the pre-program and follow-up phases, there was a statistically significant positive correlation was evident between nursing personnel and physicians regarding their knowledge, attitude, and skills pertaining to communication, collaboration, and productivity within the nursing personnel. The study recommended developing interprofessional education programs uniting nurses and physicians to enhance collaborative learning, and promoting teamwork culture.

Keywords: Collaboration, Communication, Nursing Personnel, Physicians, Productivity.

1- Introduction

In healthcare settings, effective communication and teamwork between physicians and nurses are essential for optimal patient care. Poor cooperation and communication can result in unfavorable outcomes and dissatisfaction among medical professionals. Additionally, the perception of roles and expectations differs between doctors and nurses when interacting with patients and their families [19].

Effective nurse-physician collaboration is greatly facilitated by professional, organizational, and interpersonal support. The COVID-19 pandemic has underscored the importance of a strong nurse-physician relationship characterized by shared responsibility and collaboration. Therefore, and policy makers should interprofessional collaboration and communication, emphasizing respect and teamwork between physician and nurses[34].

Communication involves sharing information, concepts, feelings, or signals via speech, writing, gestures, or behavior . It requires both message

transmission and reception, facilitate understanding and meaning-sharing between sender and recipient. Clarity, active listening, and mutual comprehension are essential for effective communication [24].

Collaboration is a cooperative and interactive process where participants work together to achieve a common objective, resolve a dilemma, or create something new. It involves exchanging ideas, resources, responsibilities and knowledge in order to promote respect and communication between them [36]. Open communication, active participation, and willingness to pool resources are necessary for effective collaboration [31].

Physicians and nurses must collaborate to deliver high-quality patient care. Incorporating interprofessional education, role clarification, and communication skills into medical education can promote a better understanding of each other's roles among healthcare professionals. This integration benefits medical students by equipping them with the

skills needed to treat patients collaboratively with nursing colleagues [6].

Defining and dividing the responsibilities of physician and nurses in the partnership with families during hospital care is critical to maximizing communication and cooperation. Respect greatly influences the collaboration between nurses and physicians understanding its conceptualization, mechanisms, outcomes, and origins can enhance productivity and patient outcomes.. Collaboration between nursing staff and physician residents can be improved through intentionally collaborating with residency program administration [20].

Therefore, improving nurse-physician collaboration and communication is critical to nursing productivity, positive health outcomes, and high-quality patient care. Overcoming obstacles such as miscommunication, hierarchical structures, or a lack of mutual understanding is crucial for fostering a collaborative healthcare culture. Initiatives focusing on teamwork, communication skills, and interprofessional education can enhance collaboration and ultimately improve patient care and nursing productivity [9].

The definition of nursing productivity is the efficient and effective conversion of resources (input) into goods and services while making the best use of human capital and physical resources for the good of the environment, the economy, and society. The relationship between a system's output and the input used to produce it is known as productivity. Being productive means achieving more with less work. Nursing productivity is the measure of how well nursing care is provided, taking into account its appropriateness, quality, and efficiency [35]. According to [17], nursing productivity is the efficacy of nursing care, which is related to its appropriateness, quality, and efficiency.

Significance of study.

Effective communication and collaboration between physicians and nurses are essential for providing optimal patient care in a timely manner in medical hospitals, private practices, and clinics.. Due to the high volume of patients they encounter daily, physicians and nurses must collaborate to ensure timely care and maximize patient outcomes. The health of a patient is the collective responsibility of the medical staff, not just the nurses and doctors individually. A patient may be mistreated, mistreated badly, or even die as a result of miscommunication, hostility, or tension between nurses and physicians. [21]. so, this study was conducted to enhance nursing personnel - physicians' communication and collaboration and its effect on nursing productivity.

2-Aim of study

This study aims to enhance nursing personnel - physicians' communication and collaboration and its effect on nursing productivity. This aim will be achieved through the following objectives.

Research Hypotheses

Nursing personnel - physicians' knowledge, attitude and skills toward communication and collaboration will be enhanced at work after implementing the program. This enhancement is anticipated to positive effect on nursing productivity.

3-Subjects and Method

The methodology of the current study that presented here according to the following categories: technical design, operational design, administrative design, and statistical design.

1. Technical design

The technical design involves a description of the study design, study setting, subjects of the study, and tools of data collection.

Study design:-

A quasi-experimental study design with pretest, posttest and follow up assessments was carried out in the study.

Study setting:-

The current study was conducted in emergency and intensive care units (ICU) at Damanhour Medical National Institute affiliated with the General Authority for Hospitals and Educational Institutes .The total number of beds at this hospital was 734. It consists of four separated buildings that had 46 units distributed as follows:

Subjects:

The subjects included in the present study consisted of two groups namely::

All the available nursing personnel 52 (7 head nurses and 45 staff nurses) and physicians (36)who were working in above mentioned study settings and available during time of data collection and having at least one year of job experience and accepted to participate in the study .

Tools of data collection:

Data for this study was collected by using five tools as a following:

I. Communication and Collaboration Knowledge Questionnaire: A structured questionnaire

developed by researcher after reviewing related literature (Ushiro, 2009; Saad, 2014; Missi, 2016; Mahdizadeh, et al. 2019& servellenn, 2020), It was included two parts:

Part (1): Personnel data which were (age, marital status, years of experience, educational level).

Part (2): knowledge test to assess nursing personnel and physicians knowledge about communication and collaboration at work place throughout program phases, It consisted of 58 items classified under seven main dimensions as following: Concept and types of communication(9items) Purpose and elements of communication(7items), Therapeutic communication technique(8items), Skills and barriers of communication(10items), Concept and types of collaboration(7items), Purpose and elements of collaboration(12items) and barriers of collaboration(5items)

Scoring system

The studied nursing personal response every related by a scaring, ranging from 1-2 as (Present, not present). These scores were converted into a percent score .Scoring system for inventory checklist (0) for not present and (1) for present answer

(University of windsor" radiation safety program", 2010; Abu-Elkhyer ,2013)

- In Adequate <60% that equals (0-34) scores.
- Adequate >75%that equals (35-58) scores.

II. Communication and Collaboration Attitude Questionnaire:

A structured questionnaire developed by the investigator after review of the related literature (Ushiro , 2009; Barabasz, 2015;&Missi, 2016 ;Karima et al.2019 ; Appah, 2020), , It was included two parts:

Part (1): to assess nursing personnel and physicians' attitude toward communication at work place throughout program phases, It consisted of 31 items classified under five main dimensions as follows:Preliminary communication(4items),Nurse-to-Physician Relationships(8items),Communication Style and Tone(6items),Attention and importance(9items)and understanding(4items)

Scoring system:

Nursing personnel and physicians responses scored on a three-point Likert scale as follows: agree was scored (3 points), neutral was scored (2 point) and disagree was scored (1 point). The total scores (99) and cut point was done 60%. The range scores of attitude checklist were expressed as follows:

- Positive attitude >60% that equals (60-99) scores.
- Negative attitude < 60% that equals (1-59) scores.

Scoring system:

Nursing personnel and physicians responses scored on a three-point Likert scale as follows: agree was scored (3 points), neutral was scored (2 point) and disagree was scored (1 point). The total scores (93) and cut point .

-Positive attitude >60% that equals (56-93) scores.

-Negative attitude < 60% that equals (1-155) scores.

Part (2): to assess nursing personnel and physicians' attitude toward collaboration at work place throughout program phases, It consisted of 33 items classified under four main dimensions as follows:Responsibilities(7items),Job Satisfaction(9items),Cooperation and coordination(7items) and role conflict(10items)

III. Communication Skills Observational Checklist:

An observational checklist developed by the investigator after review of the related literature (Gerard ,2011; Crawford et al., 2016; Lacoste, 2017& Pearson& Nelson ,2020), to assess nursing personnel and physicians' skills toward communication at work place throughout program phases, It consisted of (35) items classified under seven main dimensions as follows:The beginning of communication(5items),Data collection(8items),Relationship building)6items),Active listening (3items),Educating patients(3items),Written communication(3items) and end of the communication process) 7items).

Scoring system:

Nursing personnel and physicians responses scored on a two-point Likert scale as follows: done was scored (1 point) and not done was scored (0 point). The total scores (35) and cut point was done at 75%. The range scores of observational checklist were classified as follows:

- Competent >75% that equals (27-35) scores.
- Incompetent<75% that equals (0-26) scores.

IV. Collaboration Skills Observational Checklist:

An observational checklist developed by the investigator after review of the related literature (Schadewaldt, 2015 ;&Missi, 2016; Puntilo& McAdam, 2018;Willcocks & Conway, 2020& Lutfiyya, 2020), to assess nursing personnel and physicians' skills toward collaboration at work place throughout program phases, It consisted of (24) items classified under three main dimensions as follows:Joint participation in the care(6items),Sharing of patient information(7items) and cooperativeness (1 items).

Scoring system:

Nursing personnel and physicians responses scored on a two-point Likert scale as follows: done was scored (1 point) and not done was scored (0 point). The total scores (24) and cut point was done at 75%. The range scores of observational checklist were classified as follows:

- Competent >75% that equals (18-24) scores.
- Incompetent <75% that equals (0-17) scores.

V. Nursing productivity Questionnaire

A structured questions developed by the investigator after review of the related literature (Sehat, 2014; Rashed et al.,2015; Emin & Nurten, 2017 & Heba et al.,2019), to assess nursing personnel productivity from nursing personnel points of view , It consisted of (25) items classified under seven main dimensions as follows: Job satisfaction(5items), Professional Skill(3items), Nursing skills(6items), Interpersonal communication(2items), Problem solving(3items), Teamwork(2items) and Leadership (4itema).

Scoring system:

Nursing personnel and physicians responses scored on a three-point Likert scale as follows: agree was scored (3 points), neutral was scored (2 point) and disagree was scored (1 point). The total scores (75) and cut point was done at 60%. The range scores of observational checklist were classified as follows:

- High > 57% that equals (57-75) scores .
- Moderate 60% - 75% that equals (45-56) scores .
- Low <60% that equals (1- 44) scores.

2. Administrative design:

An official permission was issued from the Dean of the Faculty of Nursing Benha University to the director of Damanhour Medical National Institute and then an official approval was obtained from the director of Damanhour Medical National Institute to allow the investigator to collect data and give the program content; this approval was given after the aim of the study was clarified.

3. The operational design

The current study was carried out on three phases: preparatory phase, pilot study and field work phase

A- Preparatory phase

The investigator reviewed the current available books, Journals, periodicals, textbooks, internet and theoretical knowledge of various aspects concerning the topic of the study to develop the tools of data

collection. Finally, the study tools were revised and modified, then approved by jury committee.

a- Validity of the tools:

The study tools were revised and ascertained by five Experts from different nursing Faculties in the field of Nursing Administration; three Professors of Nursing Administration at Tanta University, one Professors of Nursing Administration and one Assistant Professors of Nursing Administration at Damanhour University .The validity of the tools aimed to judge its clarity, comprehensiveness, relevance, simplicity and accuracy. Based on experts' prospective, minor modifications were done based on their comments such as modified some words to give the most appropriate meaning for the phrase which were not clear and the investigator developed the final validated form of the tools.

Reliability of tools:

Reliability of the tools was examined by using the Chronbach's Alpha Coefficient test to measure the internal consistency for all tools :

- Knowledge(0.957)
- Attitude(0.837)
- communication skills(0.981)
- collaboration skills(0.922)
- productivity(0,935)

b- Pilot Study

The revised questionnaires were piloted with 10% form the subject: (6) from nursing personnel and (4) from physicians were to evaluate the effectiveness of the proposed data collection tools, and assess the feasibility of the study. In addition to estimating, the time required to fill the data collection tools and to identify obstacles and problems that may be encountered during data collection . no modifications were done .

c- Field Work

The following phases were adopted to achieve the aim of the current study: assessment, planning, implementation, and evaluation phases. Data were collected in seven months .

1-Assessment phase

The data were collected through using the different previous mentioned study tool .The pretest done before implementation of the program. The questionnaire sheets were distributed to nursing personnel-physicians according to predetermined units' schedule, the investigator was present all the time

during filling the questionnaire sheets for any clarification as needed then the investigator check each one to ensure its completeness. The investigator observed nursing personnel and physicians communication and collaboration skills observational checklist.

2-Planning phase

Program construction is in a form of printed English and Arabic booklet to enhance nursing personnel and physicians communication and collaboration .Based on baseline data obtained from pre-test assessment and relevant literature review, the educational program was by the investigator.

3-The implementation phase:

- Investigator start in giving the educational program sessions. Number of the sessions was eight sessions for each group and every session were two an hours. The participants were divided into five group based on availability of the participants for attendance and arrangement of the manger of their units. Each implementation of the educational program needed two weeks, three days per the week. The sessions were stared at 11a.m. to1 a.m. in the conference room at the unit.

Different teaching method were used, these included lecture, group discussion and brain storming. The teaching media that used during the program were lab top, black board and hand out of the educational program about communication and collaboration. Handout was distributed to studied nursing personnel (head nurses & staff nurses)and physicians in the first day of the program.

In the first session, the investigator explained the aim of the study and the objective of the educational program to the attended nursing personnel (head nurses & staff nurses) and physicians and importance of the program. At the beginning of each session the investigator reviewing was happen and feedback was given about the previous one. Displayed the program content, determined teaching methods and nursing personnel (head nurses & staff nurses) and physicians filled out a placement to test the information.

-Second session: Definition of communication and Explain the importance of the communication process.

-Third session: Elements of the communication process, Characteristics of the communication process

and types of communication process (Verbal and non-verba)l.

-Fourth session: The concept of therapeutic communication and Therapeutic communication methods.

-Fifth session: Practical communication skills, Obstacles to the communication process and How to overcome communication obstacles.

-Sixth session: The concept of collaboration and types of collaboration.

-Seventh session: The importance of cooperation and collaboration skills

-Eight session: Obstacles of collaboration and How to overcome obstacles of cooperation.

4-Evaluation phase:

After the implementation of the program, the immediately and follow up evaluation was done for nursing personnel and physicians knowledge and practice. The post-tests administered using the same pretest data collection tools.

5-Ethical Considerations:

Investigator interviewed with nursing personnel and physicians to collect data, they were informed about the purpose and benefits of the study and the fact that their participation is voluntary and they have the right to refuse to participate in the study without giving any reason. In addition, confidentiality and anonymity of the subjects were assured through coding of all data

6-Statistical design:

All data were collected ,coded, tabulated , computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 20. The obtained data were organized, analyzed and represented in tables and graphs as required. Data were presented using descriptive statistics in the form of (Percentage, Mean score, Mean Percentage score Standard deviation (SD), P value, frequency, T test). (x2) test was utilized to compare percentages between studies variables. Statistical significant was considered at P- value < 0.05 and statistical highly significant was considered at P - value < 0.01.

4-Results

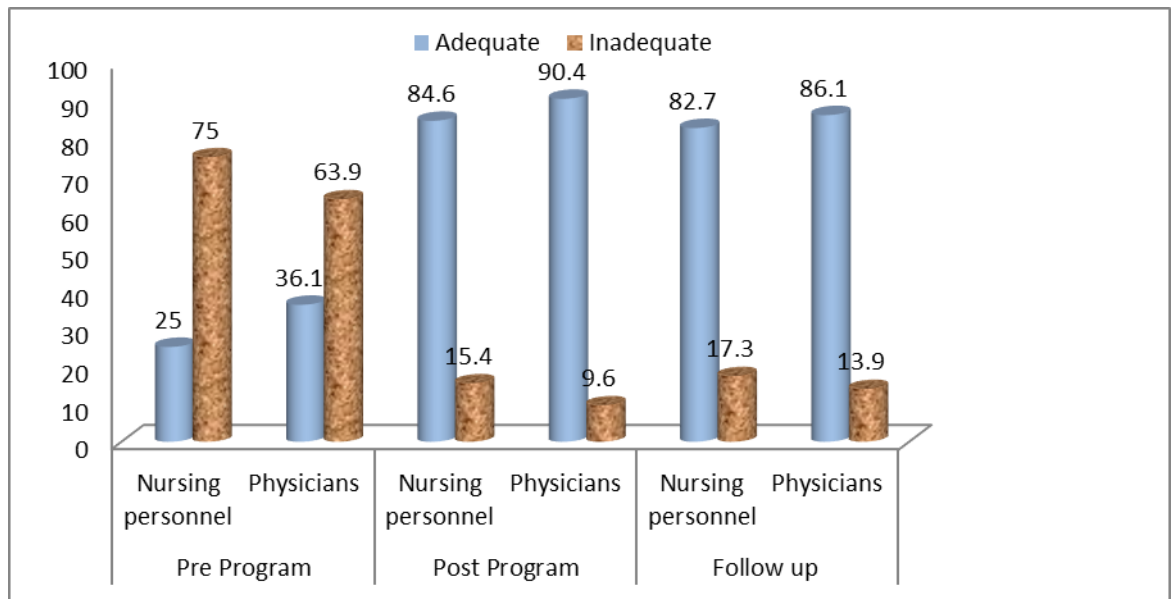


Fig. (1) Percentage distribution of nursing personnel and physicians knowledge levels about communication and collaboration throughout the program phases.

Fig (1) illustrates that; more than half of nursing personnel (75%) inadequate level of knowledge in pre-program phase while in the post program (84.6 %) and follow up (82.7 %) their knowledge level was improved and became adequate

Fig (1) illustrates that; more than half of physicians (63.9 %) inadequate level of knowledge in pre-program phase while in the post program (90.4 %) and follow up (86.1 %) their knowledge level was improved and became adequate.

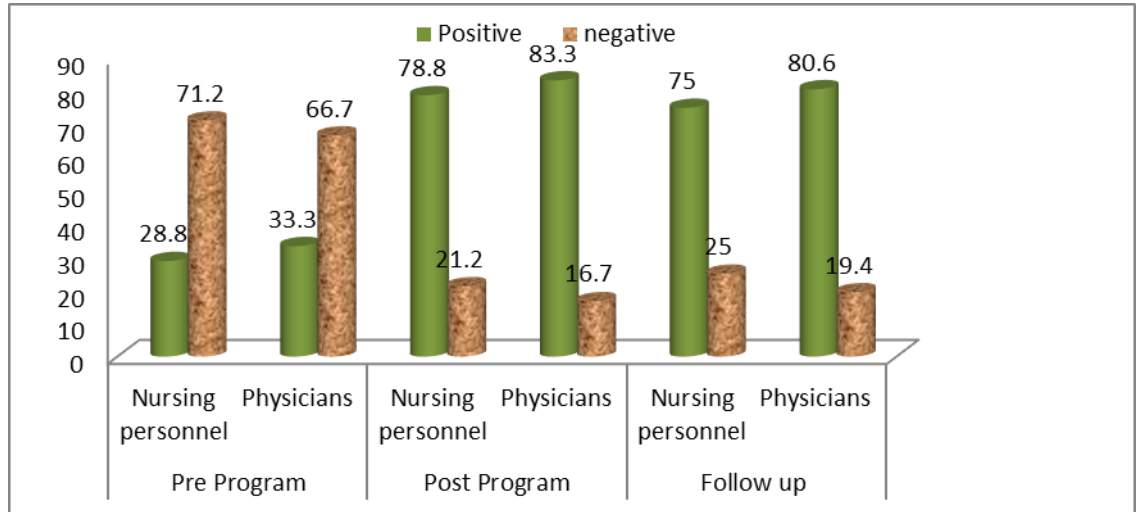


Fig. (2) Percentage distribution of nursing personnel and physicians total attitude levels toward communication and collaboration throughout the program phases.

Fig (2) illustrates that; more than half of nursing personnel (71.2%) negative level of total attitude in pre-program phase while in the post program (78.8 %) and follow up (75.0 %) their attitude level was improved and became positive.

Fig (2) illustrates that; more than half of physicians (66.7 %) negative level of total attitude in pre-program phase while in the post program (83.3 %) and follow up (80.6 %) their attitude level was improved and became positive.

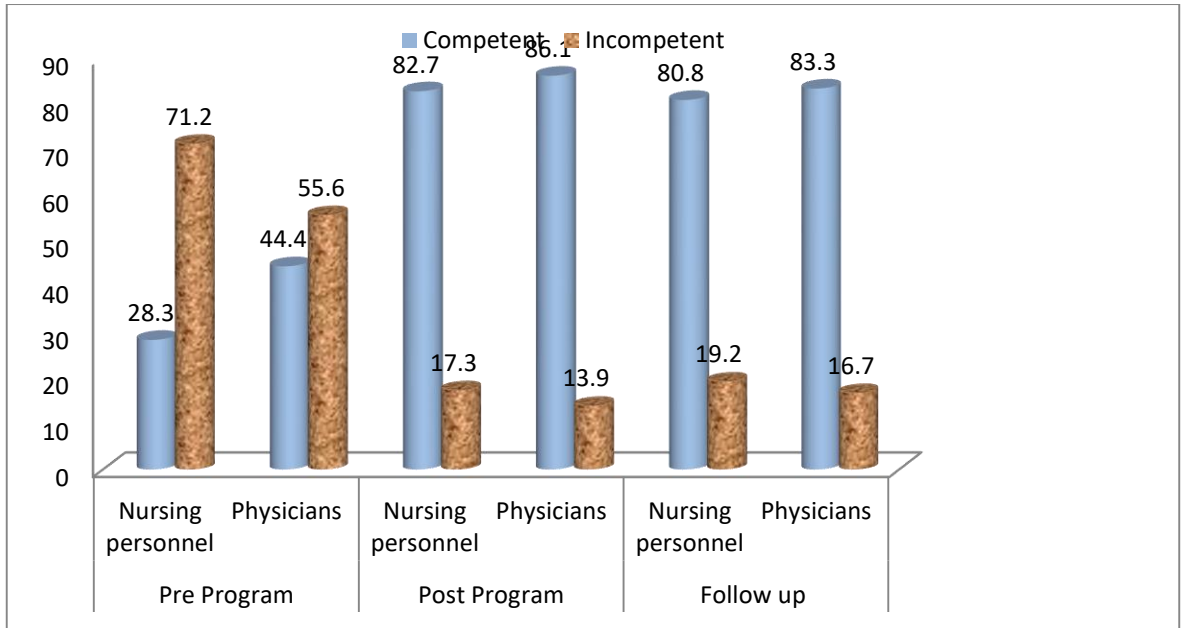


Fig. (3) Percentage distribution of nursing personnel and physicians total skills levels toward communication and collaboration throughout the program phases.

Fig (3) illustrates that; more than half of nursing personnel (71.2%) incompetent level of total skills in pre-program phase while in the post program (82.7 %) and follow up (80.8 %) their total skills level was improved and became competent

Fig (3) illustrates that; more than half of physicians (55.6 %) incompetent level of total skills in pre-program phase while in the post program (86.1 %) and follow up (83.3 %) their total skills level was improved and became competent.

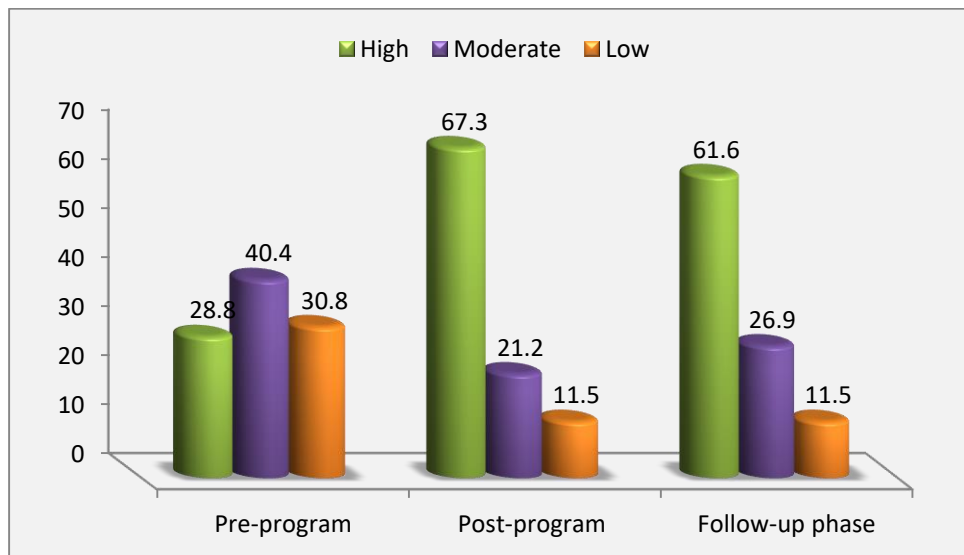


Fig. (4) Percentage distribution of nursing personnel total productivity levels throughout the program phases.

Fig (4) illustrates that; less than half (40.4 %) of nursing personnel had moderate level of total productivity in pre-program phase while in the post program(67.3%) and follow up(61.6%) there total productivity was improved and became high respectively.

Table (1) Correlation matrix among nursing personal and physicians' knowledge, attitude and skills throughout the program phases.

Studied variables	Program Phases		Knowledge		Attitude		skills	
			r	P	r	P	R	P
Knowledge	Pre program	Nursing personnel	---	---	0.213	0.130	0.193	0.170
		physicians	---	---	0.193	0.261	0.123	0.385
	Post program	Nursing personnel	---	---	0.531	0.000	0.494	0.002
		physicians	---	---	0.437	0.001**	0.629	0.000
	Follow up	Nursing personnel	---	---	0.660	0.000	-0.548-	0.001**
		physicians	---	---	0.526	0.001**	-0.513-	0.001**
Attitude	Pre program	Nursing personnel	0.213	0.130	---	---	0.119	0.400
		physicians	0.193	0.261	---	---	0.167	0.331
	Post program	Nursing personnel	0.531	0.000	---	---	0.771	0.000
		physicians	0.437	0.001**	---	---	0.722	0.000
	Follow up	Nursing personnel	0.660	0.000	---	---	0.321	0.020
		physicians	0.526	0.001**	---	---	0.677	0.000
skills	Pre program	Nursing personnel	0.193	0.170	0.119	0.400	---	---
		physicians	0.123	0.385	0.167	0.331	---	---
	Post program	Nursing personnel	0.494	0.002	0.771	0.000	---	---
		physicians	0.629	0.000	0.722	0.000	---	---
	Follow up	Nursing personnel	-0.548-	0.001**	0.321	0.020	---	---
		physicians	-0.513-	0.001**	0.677	0.000	---	---

Table (1) shows that; there were positive correlations between knowledge, attitude and practice score throughout program phase. A statistical difference occurred at P- values of 0.001

5-Discussion

Improving the collaboration and communication between nurses and physicians can affect the productivity of nurses. It has been demonstrated that inadequate communication and lack of teamwork between nurses and doctors can lead to avoidable adverse events and reduce patient safety. Effective communication can enhance the self-concept and confidence of nurses, who are vital to patient care. But research has shown that ineffective nurse-physician collaboration frequently results from hurdles like inadequate support systems, a lack of professionalism, and inadequate communication [10].

Thus, Improving patient safety and communication efficiency can result from bridging the gap in communication between nurses and doctors. Although relationship-building interventions have the potential to enhance communication and collaboration, research is still needed to determine the effects of nurse-physician communication interventions on nursing productivity and psychological empowerment. Encouraging a culture of open communication and positive relationships can help healthcare professionals feel more empowered, which may improve their general well-being and job satisfaction [32].

Therefore, The aim of the present study was to assess nursing personnel - physicians communication and collaboration thorough program and its effect on nursing productivity throughout educational program on nursing personnel- physicians knowledge, attitude

and performance through the program phases at Damanhour Medical National Institute .

To fulfill the aim of the study the following hypotheses were formulated; there would be an improvement in nursing personnel - physicians 'knowledge, attitude and performance toward communication and collaboration and nursing productivity would be improved after implementing the program at work.

Discussion of the study results was presented in the following sequence; **The first part**; concerned with personal characteristics of nursing personnel-physicians; **The second part**; elaborated nursing personnel - physicians knowledge related to communication and collaboration at their work thorough program; **The third part**; focused on nursing personnel - physicians attitude regarding to communication and collaboration at their work thorough program; **The fourth part**; focused on nursing personnel - physicians actual performance regarding to communication and collaboration at work thorough program; **The fifth part**; focused on nursing personnel regarding to productivity at their work thorough program ; **The sixth part**; focused on correlations among studied variables of communication and collaboration; The seventh part; focused on correlation between nursing personal productivity and their knowledge, attitude and skills.

I. Studied subjects knowledge about communication and collaboration through program phases:

After three months of program from the preprogram phase, the current study demonstrated a

highly statistically significant improvement in the studied nursing personnel's knowledge of collaboration and communication throughout the post and follow-up phases. The majority of nurses and doctors had low knowledge prior to the program, but their knowledge quickly improved to become good in terms of collaboration and communication. This improvement was not entirely maintained in the follow-up phase, but it was still higher than before the program. After the program, the majority of them had a satisfactory knowledge level, while the minority had an inadequate knowledge level.

According to the researcher, this improvement in knowledge is connected to getting adequate instruction and hands-on experience with these subjects during the program (role model, demonstration, visible guidelines, and written handbook).

These results were in line with some research conducted by [15], who compared pediatric physicians' and nurses' attitudes toward effective communication and teamwork after multidisciplinary interventions were implemented at Hamad Medical Corporation (Doha, Qatar) Hospital. Their findings indicated that knowledge is linked to improved patient care, increased teamwork, and job satisfaction. Additionally, [16], reported in their study about a three-year quality improvement project at Ottawa Hospital in Canada that aimed to improve communication between nurses and resident physicians. They discovered that there was a statistically significant difference in the knowledge mean scores they received from the pre-, post-, and follow-up tests.

The findings of [22], study, which examined the redesign of interprofessional collaboration through a nurse-for-a-day shadowing program for medical residents at Cedars-Sinai Medical Center, are more in line with international research. Following the program's implementation, they discovered a highly significant statistical difference in the knowledge scores. In line with [5], they conducted research at University of Minnesota Hospitals (USA) to assess the effects of ongoing medical education in an interdisciplinary team using a novel, focused approach. They reported that following program implementation, both professional groups' knowledge scores showed improvements in a highly significant statistical difference across a variety of communication and collaboration-related domains.

II. Examined participants' attitudes toward cooperation and communication throughout program stages

The results of the current study showed that the nurses' and physicians' attitudes toward cooperation and communication had significantly improved. At the post-program and follow-up phases of the study, the majority of them displayed an extremely positive attitude. According to the researcher, this improvement may be connected to how well the

program meets the unique needs and differing learning styles of medical professionals and nursing staff. Programs that address the different learning styles and backgrounds of both groups may produce more equal results. Lack of awareness or official training in effective communication and collaboration methods may be linked to a poor attitude in the preprogram. Previous unpleasant encounters or difficulties in Participants' attitudes may have been influenced by communication and teamwork. These encounters might have shaped their early impressions. Communication obstacles: Problems like language barriers, inadequate communication channels, or hierarchical structures may have impeded collaboration and effective communication, which in turn may have decreased commitment or engagement.

This outcome was consistent with a study by [27], on Using simulation-based interprofessional education to alter trainee physicians' and registered nurses' attitudes toward collaboration in higher specialty training: A pilot study using mixed methods. The program outlined in the abstracts appears to have a significant positive impact on the attitudes of physicians and nursing staff regarding collaboration and communication, according to Nottingham University Hospitals (London).

However, the results contradicted those of [25], who conducted a multicenter, mixed-methods study on nurse-physician communication in patient care and related factors in public hospitals of Harari Regional State and Dire-Dawa City Administration, Eastern Ethiopia. They demonstrated the low degree of communication attitudes among nurses and doctors when providing patient care. It has been discovered that unappealing workplaces and unfavorable professional attitudes hinder nurse-physician communication in patient care.

There has been a general improvement in the attitudes of nursing staff and physicians regarding the collaboration during the various program stages. There was a significant statistical difference between the pre- and posttest attitudes as well as the follow-up attitudes. In this regard, [12], noted that attitudes have an impact on the clinical environment, and that nurse-physician collaboration in a hospital setting is a valuable resource that any responsible government, hospital administration, policy maker, and health care manager would want to embrace.

In line with [36], research, what is the effect of nurse-physician collaboration during bedside rounding on the nurse? at Central Florida University. According to them, inadequate communication is to blame for most sentinel events that occur in hospitals, such as medication errors, wrong-site surgeries, and failed rescue attempts. An established procedure in the intensive care unit, interdisciplinary rounding offers a platform for dialogue and cooperation and has been connected to better patient outcomes.

III. Studied subjects skills about communication and collaboration through program phases.

The results of the current study showed that the performance levels of the physicians and nursing staff under study had significantly improved in terms of teamwork and communication. The majority of them performed extremely well during the study's post-program and follow-up phases. The researcher believes that ongoing workplace workshops, written policies and posters, and ongoing demonstration could all contribute to this improvement. Additionally, an excellently planned and carried out program for cooperation and communication. The success is probably complex, involving a multidisciplinary approach, structured instruction, interactive learning, leadership support, ongoing reinforcement, and real-world application. Together, these elements support the upward trend in performance and the ongoing advancements noted in the study's post-program and follow-up stages.

This result is more in line with findings from international research, as demonstrated by [3], mixed method multi-centered cross-sectional study on inter-professional collaboration and related factors among physicians and nurses in specialized public hospitals in the northwest of Ethiopia. They discovered that the study was successful in giving doctors and nurses the skills and information they needed to handle challenging communication situations and promote cooperative interactions in the healthcare setting. These results were also in line with a study conducted by [13], at Dublin University in Ireland, which focused on partnership working and future nursing planning. According to the researcher, adherence to the post-program and follow-up care improved and nurses' practices improved in a highly statistically significant way. In terms of interprofessional competencies, such as communication, teamwork, roles and responsibilities, collaborative patient/family-centered approach, and team functioning, the results show statistically significant improvements.

The study also emphasizes how crucial it is to concentrate on task-interdependence and collaborative relationships in interprofessional care settings in order to promote shared understanding among collaborators. The study also highlights how important it is to foster safe and supportive work environments in order to support interprofessional collaboration between doctors and nurses. All things considered, the program has shown that it can improve teamwork and communication abilities, which helps with efficient healthcare delivery.

These results were in line with some research conducted by [29], which looked at a program designed to enhance collaboration and communication between medical residents and nurses. According to their report, the educational program was effective in enhancing the cooperation and exchange of ideas between physicians and nurses,

resulting in better patient care. In this regard, [26], reported on a survey study assessing and contrasting the communication skills and knowledge of health literacy utilized by doctors and nurses in San Mateo, California. It was mentioned that both doctors and nurses acknowledged the value of integrating communication skills into their practices and indicated a willingness to receive training on health literacy. But the study also identified obstacles to putting health literacy interventions into practice.

This result was in line with what [37], found when they studied the development of an educational program for nurses on collaborative care and interprofessional collaboration with the goal of enhancing nursing practices and knowledge. They investigate nurses' opinions of nurse-physician collaboration at University of Wisconsin Health in Madison, USA, which is also in line with [18]. They discovered that work-related stressors have a negative effect on nurse-physician collaboration and that putting stress coping mechanisms into place can help the organization succeed. Furthermore, [15], reported that the use of collaborative simulation training has improved physicians' and nurses' teamwork skills and their understanding of the value of interprofessional collaboration in healthcare practice. According to their research on how attitudes and perceptions of effective. Following the implementation of multidisciplinary interventions, pediatric physicians and nurses engage in communication and team collaboration.

This result was in conflict with that of [10], mixed method multi-centered cross-sectional study, which examined inter-professional collaboration and related variables between nurses and doctors in specialty public hospitals in the northwest of Ethiopia. It demonstrated that the bulk of the group under study performed below acceptable levels. According to the study, a sizable portion of participants engaged in inefficient teamwork when performing their professional duties, including inadequate joint participation in patient care between nurses and doctors. Unsatisfactory organizational support, inadequate professional support, and inadequate interpersonal support were all independently linked to ineffective collaboration during their professional activities. Poor communication, a lack of professionalism, and a disregard for professional obligations were found to be the main obstacles to nurse-physician collaboration in the qualitative findings.

IV. Nursing personnel productivity through program phases:

After three months of the preprogram phase, the current study found that there was a relative improvement in nursing personnel's productivity during various program phases throughout the post and follow-up phases. Most of them were very

productive after the program phases and in the interim. The improvements showed that the productivity of nursing staff had changed for the better. The enhancements pertain to the productivity and effectiveness of the nursing personnel. This may involve the capacity of nurses to oversee work, tend to patients, or work well with others in the healthcare team.

These results were consistent with some research conducted in Egypt, such as that conducted by [23], who examined the impact of nurses' professional competence approach on their productivity in medical-surgical units. The impact of nurses' professional competence approach on their productivity in medical-surgical units was highlighted by Banha University (Egypt). The strategy improved nurses' performance, productivity, and knowledge, according to the study. In a similar vein, [2], verified that the application of leadership styles is essential for nursing practice that aims to raise nurse productivity.

This result was corroborated by research conducted internationally by [4], who discovered that these initial findings of improving healthcare efficiency support the viability of implementing significant process changes that demonstrate a promising increase in the productivity of nurses. In this regard, [14], noted that effective shift scheduling contributes to a positive work environment where health, safety, and welfare regulations are met and each employee increases productivity levels by showing up at the appropriate time and place and working on the appropriate task. Furthermore, nurses can be compared based on a wide range of criteria, including experience, preference, date of hire, and more. Their relationship can also be examined based on working shifts, location, task, and time.

This outcome was in line with the findings of [30], who found that nurses' inability to improve in remote work conditions from the first to the second measurement was linked to a lessened decline in engagement and productivity, respectively. Furthermore, a study carried out at Benha University Hospitals in Egypt discovered that low levels of productivity among nursing personnel were caused by factors related to the nursing shortage, such as work overload and inadequate salary [28].

V. Correlation between study variables:

The findings of the study revealed that there was positive statistically significant correlation between total knowledge scores with total performance scores and attitude toward communication and collaboration at preprogram, post program and follow up phase of the study .

This finding is supported by [7], who study nurses' professional values and attitudes toward collaboration with physicians. The researcher explores the relationship between nurses' professional values and their attitudes toward collaboration with

physicians. On other hand, [11], who reported that there

was positive correlation between physicians and nurses is complementary and nurses are partners in patient care.. On the same line [26], who studies a survey study evaluating and comparing the health literacy knowledge and communication skills used by nurses and physicians. They illustrated a strong positive correlation between knowledge and practice scores for the study and control groups .

These findings were inconsistent with [8], who reported that there is no correlation between knowledge, attitude and practice of nurses and physicians .they are struggling to cope due to heavy clinical workload, organizational constraints and differing power relationships, and also with [33], who found no significant correlation between nurses and physicians knowledge and attitude. nurses and physicians do not share the same views concerning the effectiveness of their communication and nurses' role in the decision-making process of the patients' care, especially in countries with limited interprofessional collaboration culture .

Regarding to correlation between nursing personal productivity and their knowledge, attitude and skills through the program phases. The present study showed a significant and positive relationship between nursing personnel productivity and their total knowledge attitude and skills particularly after the implementation of the program and during the follow-up phase. These findings underscore the potential benefits of the program phases enhancement programs in positively influencing productivity within nursing teams.

6. Conclusion

The study has generated the following findings:

The current study that the educational program implemented was effective. Notably, a statistically significant improvement was observed in knowledge, attitude, and skills regarding collaboration and communication among physicians and nursing personnel when comparing the post-program and follow-up phases with the preprogram phase. As well as an improvement in the productivity of nursing staff. throughout the post- and follow-up phases from the preprogram phase. Additionally, there was a statistically significant positive correlation between the knowledge, attitude, and skills of nursing personnel in communication, collaboration, and productivity across the preprogram and follow-up phases. during the preprogram and follow-up phases of the study, there was a positive statistically significant correlation between the knowledge, attitude, and skills of nurses and physicians regarding communication and collaboration.

7. Recommendation

In view of the conclusions drawn from this investigation, the following is advised:

Regarding hospital management:

To optimize interprofessional collaboration between physicians and nurses through:

Develop interprofessional education programs focusing on enhancing communication skills, clarifying roles, and fostering a collaborative culture through integrate role-playing exercises, simulated scenarios, case studies and real-life examples to equip healthcare professionals with practical strategies for overcoming communication barriers communication tactics, highlight successful cases and best practices.

For nursing personnel:

Emphasize the use of standardized communication tools and active listening to ensure clarity and effective exchange of information.

For physicians:

Provide interactive workshops to deepen doctors' understanding of the nursing perspective and the importance of collaborative and communication.

For additional study :

1-Reapplication It is advised to reapply the study using a larger probability sample .

2-Examine the impact of teamwork and communication on the safety of patients and employee satisfaction .

3 -Impact of collaboration and communication on the quality of patient care and the well-being of healthcare professionals.

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