Impact of Social Media-Based Training Program on Nurses' Performance in Caring Children with Chest Tube

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Abstract:

Background: Chest tube is a widely applied therapeutic postsurgical intervention in respiratory and cardiothoracic care. The chest tube can be a life-saving intervention for children with pneumothorax, effusions, and hemothorax. It is however associated with significant morbidity and mortality. **Aim:** This study aimed to determine the impact of social media-based training program on nurses' performance in caring children with chest tube. **Research design:** A quasi-experimental design was utilized to achieve the aim of this study. **Setting:** The research was conducted at the Pediatric Chest Intensive Care Unit affiliated with Beni Suef University Hospital, Egypt. **Subject:** A convenient sample included all (50)nurses who worked in the previously selected setting. **Tools**: Tool I: Nurses' personal data, Tool II: Nurses' knowledge and Tool III: Nurses' practices observation checklist (pre and post). **Results:** This study revealed a statistically significant improvement in nurses' knowledge and practices respectively pre and post-social media-based teaching. **Conclusion:** The current study concluded that social media-based teaching positively improves nurses' knowledge and practices in caring children with chest tubes. **Recommendation: Provide** continuous in-service training for nurses caring for children with chest tubes in different healthcare settings.

Keywords: Chest Tube, Children**,** Nurses' Performance, Social-Media-Based Teaching

Introduction:

Chest tubes are used for everything from life-threatening situations to postoperative chest drainage in elective surgery, they are among the most common operations performed in a variety of medical, surgical, and critical care disciplines. More than 448,000 children had cardiothoracic surgery, which included the removal or repair of the Coronary Artery Bypass Grafting (CABG) valve and the fixing of abnormalities that frequently lead to chest tube intercalation, according to the American Heart Association. Every year, more than a million chest tubes are implanted for children in the US alone (**Hassanin et al., 2019).**

Inserting a chest tube allows for full lung expansion, restores important negative pressures in the chest, and eliminates pathological air or fluid accumulations in the pleural space, all of which contribute to proper ventilation. The management of thoracic and pleural pathologies can be accomplished easily thanks to the efficiency and simplicity of chest drains. In critical care, chest drains can save the child`s life, but they require careful monitoring and safe insertion. Several disease processes are covered by the indication for closed intercostal drainage in hospital settings. It can be used to treat an immediate, life-threatening condition or to palliate a chronic disease process (such as the drainage of pleural malignancies). The chest tube may also serve as a route for pharmaceutical therapies (such as decompression of the pneumothorax voltage), as when used with antibiotic therapy for the treatment of the disease (**Mohammed, 2019**).

The pleura, a double-layered serous membrane that consists of the visceral and parietal pleurae, covers the lungs, which are essential breathing organs. Pleural fluid, which is found in the space between the pleura, helps lubricate and reduce friction between the lungs and the chest wall (**Soge et al., 2019).** By putting a tube into the pleural or mediastinal cavity, chest drainage entails removing air, water, blood, and other fluids. For children who have chest damage

or heart and chest surgery their treatment frequently includes a chest tube (**Porcel, 2018).** A chest tube system allows collected blood, air, and fluid to be released into the outside world, restoring the negative pressure inside the pleural cavity (**Seyma et al., 2021**). Maintaining hemodynamic stability and adequate respiratory function necessitates diligent management of chest drains. Nurses must provide clear and precise instructions to nursing personnel. This approach will ensure the safe, appropriate, and proficient care of pediatric patients with chest tubes (**Cheng et al., 2019**).

Although there are several reasons why chest drainage might be required, it is mostly used in thoracic surgery to re-inflate collapsed lungs in cases of pneumothorax. To avoid complications like cardiac tamponade, chest tubes are frequently placed as part of the care of patients undergoing cardiac surgery to drain serosanguinous fluid from the pleural or mediastinal cavities (**Tarhan et al., 2019**). Pneumothorax is common in infants; from September 2010 to August 2011, Cairo University Hospitals reported 9.1% prevalence. Another study at Mansoura University Children's Hospital (MUCH) found that roughly 72 (36%) of the 200 children who needed chest tube insertions between January 2018 and January 2019 for different diseases were babies (**Arafa et al., 2022**).

The insertion and removal of chest drains can present various challenges. Studies indicate that complications related to the placement and maintenance of chest drains occur in approximately 5% to 35% of cases. Among the most critical risks is tension pneumothorax, which may arise from blockages in the drainage system or during the removal procedure. Additional risks include bleeding and inadvertent tube removal or displacement, which can pose significant threats to a child's safety, increase morbidity, and prolong the duration of treatment **(Abuejheisheh et al., 2021)**. Additional complications linked to chest tubes include infections at the drainage site, pneumonia, empyema, intercostal neuralgia from trauma to neurovascular bundles, bleeding from injury to the intercostal artery, perforation of vascular structures like the aorta or subclavian vessels, and perforation of visceral organs like the lungs, heart, diaphragm, or intra-abdominal organs are examples of technical problems that might also arise. The nurses need to be aware of these potential complications to ensure optimal patient care and outcomes **(Arafa et al., 2022).**

Chest tube implantation may result in pain, restricted movement, greater susceptibility to infection, reduced breathing, and more difficulties with postoperative care, particularly in youngsters. These tubes lead to extended hospital stays and increased medical costs in addition to causing discomfort for kids. The appropriate nursing care of chest tubes after thoracic procedures has therefore become a topic of increasing attention in recent years **(Cheng et al., 2019). Seyma et al. (2021)** mentioned that nurses who possess sufficient knowledge and experience in caring for children with chest tubes can speed up the healing process, reduce potentially fatal complications, improve child satisfaction, shorten hospital stays, avoid nosocomial infections, and save money. So, children with chest tubes must be monitored by nurses, who must also spot possible problems and offer suitable fixes **(Tarhan et al., 2019).**

Globally, social media is used by billions of people, and its meaning is constantly evolving, as **Lee Ventola (2018**) describes the term usually refers to Internet-based tools that allow people and societies to share information, ideas, images, and other content, healthcare providers use social media to promote professionalism, increase individual awareness, provoke patients, debate healthcare regulations and practice issues, promote healthy behaviors, and spread health information to the public.

Individuals, who read newspapers, watch television, and listen to the radio may seek healthcare services because of their media exposure. The term "social media" encompasses any written, spoken, or broadcast message aimed at a wider audience, one important tool for promoting social cohesion is the media **(Viswanath et al., 2020**). The integration of mobile health services with in-person engagements presents a promising approach to encouraging healthier behaviors. Smartphones offer a diverse array of applications tailored to users' needs, including Instagram, WhatsApp, email, and SMS (short message service). While

WhatsApp has become the preferred platform for multimedia communication, SMS remains a valuable tool for doctors to send reminders to children and their parents regarding prescription adherence. Moreover, WhatsApp continues to serve as a widely used application for facilitating communication within the healthcare sector. The term "mobile health," or "mHealth," refers to the use of wireless and mobile communication technology to enhance healthcare delivery, outcomes, and research. Digital technology can help overcome traditional barriers related to geography, economics, and literacy (**Ouedraogo, 2021).**

Utilizing mHealth to enhance the skills and awareness of nurses is a highly cost-effective strategy, particularly in low- and middle-income countries. Mobile phone interventions, including voice messages, SMS (short message service), videos, and applications, can be implemented either independently or in conjunction with in-person services. This approach has the potential to significantly improve children's health outcomes by increasing access to essential information and empowering healthcare providers **(Aung et al., 2020 & Hill et al, 2020).**

Providing nursing care to children with chest drains is essential and should begin with a thorough evaluation of their lung function. It's important to inspect the dressing for any drainage at the insertion site, as well as to examine the area for signs of tube migration and subcutaneous emphysema. Additionally, steps must be taken to prevent the formation of fluid-filled dependent loops that could obstruct drainage. All tubing should remain free from kinks or blockages to ensure effective drainage (**Abuejheisheh et al., 2021 & Clinical Key for Nursing, 2023).**

Nurses are responsible for educating children and their caregivers on various topics and ensuring they stay well-informed. This knowledge is enhanced through a range of teaching methods, including instruction, self-education, discussion, and demonstration. Self-educational techniques are particularly effective, as they allow learners to study at their own pace and emphasize the importance of rereading. So; social media-based training programs are highly effective for improving nurses' roles in children's care, thus establishing standards for how pediatric nurses should use social media professionally while caring for children with chest tubes can significantly enhance their roles in providing care. Social media-based training programs can be effective by creating private groups where nurses can share stories, ask questions, and access valuable resources. These programs should address privacy concerns, ethical standards, and proper material sharing. Additionally, setting up forums for discussing case studies, exchanging ideas, and offering mutual support for common nursing tasks can be beneficial. Hosting regular webinars with pediatric nursing experts and live sessions that allow for in-person interaction and procedural demonstrations is crucial. Moreover, creating a repository of training materials, articles, and videos will enable nurses to access up-to-date information at any time. Regularly updating these training resources will ensure they remain current and engaging for nursing professionals (**Cook et al., 2019**).

In order to effectively provide treatment and collaborate with other healthcare professionals, nurses must possess the necessary knowledge and abilities; they play a crucial role in educating and supporting children (**Seyma et al., 2021**). The instructional bundle is also a successful learning strategy. It is especially helpful for learning and applying information in cognitive and behavioral sciences and enables students to study independently according to their own needs and psychomotor domains. Instructional packages often include resources such as textbooks, scientific journals, and handout notes provided by teachers. They can serve as a foundation for introducing principles, providing step-by-step guidelines before demonstrating professional skills, and enabling learners to regularly evaluate their progress and receive immediate feedback **(Mohammed & Farag, 2019).**

Significance of the study:

The evidence supporting chest tube treatment after pediatric heart surgery is weak. To aid in the removal of air from the pleural space, chest tube insertion is commonly recommended (**Kagan et al., 2021**). Among

children admitted to the Pediatric Intensive Care Unit (PICU), pneumothorax is a prevalent ailment. Continuing education and training for nurses is the cornerstone of pediatric care in PICU settings. It gives nurses new performance requirements to meet when caring for children with chest tubes to maintain competence and guarantee that they receive safe and efficient care.

Nursing studies and data on chest tubes and related nursing care in pediatric emergency rooms and intensive care units are sparse in Egypt (**Taylor et al., 2018**). According to the research investigator's clinical experience, children who have a chest tube have a higher risk of problems and require longer hospital stays. The goal of this study is to establish appropriate performance standards for nurses caring for children with chest tubes to reduce problems, shorten hospital stays, promote recovery, improve the quality of care given, and lessen the cost of hospitalization.

Inserting a chest tube is a routine technique in hospital practice. Therefore, it is crucial that all members of the medical team who care for patients who have chest tubes have a sufficient awareness of the drainage system and the basic principles of chest tubes. According to **Ibrahim's (2018**) findings, the majority of nurses in the study had statistically inadequate chest tube practice.

Social media sites like Facebook, Instagram, WhatsApp, Snapchat, and Twitter have removed the obstacles that come with face-to-face interactions, enabling regular and effective communication. According to **Aldurayish et al. (2020**), patients use social media as a way to share medical records with other patients going through similar struggles, learn more about their ailments, and communicate with others quickly and effectively. It's becoming increasingly clear that social media platforms, along with mobile apps and communication technology, are leading the way in healthcare innovation. There is little evidence that this significantly affects the health outcomes of women. Therefore, this study aims to ascertain how social platform-based instruction affects nurses' performance in providing child care.

Operational definitions

Nurse performance is the activity, accomplishment, or successful completion of a nurse's duties with respect to the responsibilities assigned to them **(Supri, et al 2019)**

Pediatric nurse performance is characterized as "their understanding and applications of social platform-based teaching in the care of pediatric patients with chest tubes."

Social media-based training: Social media marketing's original objectives were to create an "online community for us all" and cultivate interpersonal connections. In the current study, nurses who had an internet connection on their phones (either mobile data or WiFi at home) and social media (Facebook, Viber, or What's App) were taught how to provide care for children with chest tube methods. Messages delivered through the WhatsApp app, direct calls from mobile devices, interactive materials, pictures, videos, and answering questions are all part of the vision called for participating in online forums.

Aim of the study:

The study aims to determine the impact of social- media -based training on nurses' performance caring for children with chest tubes through the following objectives:

1- Assess nurses' knowledge and practices regarding chest tube
2- Design, and implement social-media-based training based on the needs of nurses.
3- Evaluate the effect of social-media-based training.

Research hypothesis:

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ocial -media-based training is expected to improve nurses' knowledge post-intervention than pre-intervention

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ocial -media-based training is expected to improve nurses' practice post-intervention than pre-intervention

Subjects and Methods

Design:

A quasi-experimental design was utilized to achieve the aim of this study. One group pre-

posttest quasi-experimental research design was utilized to achieve the aim of the current study. A quasi-experimental design is one type of experimental design that is very similar to the true experimental design except it lacks one criterion as randomization or control (**Gray et al., 2019).**

Setting:

The research was conducted at the Pediatric Chest Intensive Care Unit affiliated with Sohag University Hospital.

Subjects:

A convenient sample included all (50) nurses who worked in the previously selected setting.

Tools of data collection:

Tool I: Nurses' personal data:

It was used to assess the Nurse's demographic characteristics such as: - Age, sex, marital status, educational level, years of experience, and training courses.

Tool II: Nurses' knowledge (pre and post).

This part was developed by the researchers afterreviewing the related literature **(Abuejheisheh et al., 2021; Arafa et al., 2022; & Kagan et al., 2021).** It included 6 items containing **17** questions to assess the nurse's knowledge about the respiratory system and its function, chest tube drainage and its complications, and the nurse's role in chest tube management.

Scoring system of nurses' knowledge: Two levels of scoring for questions were as follows: Correct answer scored one Don't' know or incorrect answer scored zero. The total scoring system ofnurses' knowledge was 34 and it was categorized into two levels -Satisfactory of the total score of knowledge ≥ 60% of the total score. Unsatisfactory total score < 60% of the total score.

Tool III: Nurses' practices observation checklist (pre and post).

This part was developed by researchers after reviewing the related literature **(Abuejheisheh et al., 2021; Seyma et al., 2021).** The researcher created it in Arabic after reading relevant literature to evaluate nurses' practices with reference to chest tube procedures. Questions 68–73 were included, along with the following items: child evaluation. The questions ranged from 1 to 13. Drainage patency in the chest tube, It covered questions 14–21. Changing the dressing at the location of the chest tube drainage insertion. It covered questions 15–37. If the chest drainage bottle is filled or broken, replace it. It covered questions 38 through 59. Health education, Questions from 60 to 70 were included. The process of draining a chest tube, contained queries 71–93.

Scoring system: - Scoring system: each question was evaluated with 1 score for done and 0 scores for not done. The total practice level was classified into:

- Competent : > 60 %
- Incompetent : < 60 %

Fieldwork:

The fieldwork started in October 2023 to March 2024. The researchers made two visits/week for two weeks, (Saturdays & Mondays, from 10.00 a.m. to 12.00 moon) to complete the pre and the same with post-test. The average time needed to complete the tools ranged from 35-40 minutes. The rest of the teaching was done by using social media such as WhatsApp, Telegram, and Facebook applications.

Validity& Reliability

The validity of the tools is whether or not the instrument measures what it is designed to measure it was done by seeking the opinions of a jury group consisting of five professors of Pediatric Surgical Nursing who judged their clarity, comprehensiveness, accuracy, relevance and whether it elicited the type of information sought; thus the tools were the face and content-validated. The tools were not modified and rephrased based on the jury's opinions. To ascertain the relevance, clarity, and completeness of the tools, experts elicited responses were either agree or disagree with the face validity.

Tools reliability:

Testing the reliability of proposed tools was done by Cronbach alpha test. The result for

knowledge was 0.84 and 0.89 for reported practices.

Pilot study:

The pilot study used 10% (5 nurses) of the total sample to confirm that the tools were clear and applicable, as well as to estimate the time required to complete them.

Ethical considerations

The research approval was issued from the Scientific Research Ethical Committee in the Faculty of Nursing at Sohag University before starting the study. The researcher clarified the importance and aim of the study to all the nurses included in the study. Informed consents were obtained from all the studied nurses. All nurses were 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 without giving any reason and confidentiality of the information was assured. All nurses were informed that the collected data would be used only for the present study, as well as for their benefit.

Social media instructional guidelines construction:

It consisted of three phases, the preparatory phase, the implementation phase, and the evaluation phase.

Preparatory phase:

This study was preceded by a preparatory phase in which the following activities were performed:

An official letter requesting permission to conduct the study was submitted from the Dean of the Faculty of Nursing to the manager of the previously selected settings. This letter included the aim of the study and the data collection tools to get permission and cooperation in the collection of data.

Then, the researchers met nurses who agreed to participate in the study and explained the aim and objective of the study, then oral approval consent was obtained from them before the instructional guidelines' method was applied.

Assessment using the previous tool was done by reviewing past and current literature covering the various aspects of the research in books, articles, periodicals, magazines, and studies related to the research study.

Implementation phase:

The researchers added nurses who worked in the selected settings to the designed social-media-based training groups. The researchers used a telephone number to reach all participants through social media such as Whats app, telegram, and Facebook the most available and routinely used by the study sample and then sent the data or information through previously mentioned methods. The teaching guidelines were implemented in the form of text, video, and brochures.

Social-media-based training sessions included: the purpose of the study, steps of intervention, obtaining oral informed consent, sitting time for other social media platforms educational sessions, and identifying methods of contacting the researchers. Using study instruments I, II, and III, the pre-test of knowledge and observational checklist for practice was done. At the end of the session, the guiding booklet was given to nurses. The outlines of the social-media-based training session included: The content covered an overview of the chest tube, about respiratory system and its function, chest tube drainage and its complications, and the nurse's role in chest tube management that uses theoretical parts and videos to show practices. Then videos, PowerPoint, and text messages through instant messaging software applications such as Viber, What App, and Facebook to the content of information displayed by using interactive visualized and animated instructions about caring for children with chest tubes.

Evaluation phase:

This phase was used to assess the effect of social-media-based training on nurses' performance in caring for children with chest tubes the post-test was done for nurses after one month to estimate the effect of the social-media-based training using the same pre- training tools.

Statistical Design:

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 22. Qualitative data were presented as numbers and percentages. The mean andstandard deviation for each of the demographic, data, and t-test and Chi-square test were recorded Comparison

between pre and post-test; P >0.05 was considered to be statistically significant of results; P >0.05 was statistically significant of results.

Results:

Table (1): Illustrated that 60 % of nurses' age ranged from 18 to < 25 years old, with mean ± SD (24.97+8.84). Regarding gender 20 % of nurses were males while 80 % of them were females. Concerning education 48% of nurses graduated with a Diploma education. As nurses have years of experience, 64% of them had 1<5 years. 100% of the nurses did not receive any form of chest tube educational training.

Table (2): This table showed that there were improvements in nurses' knowledge mean scores regarding scoring from 18.22±4.33 to 32.42±1.04 with a statistically significant difference detected between nurses' knowledge mean scores post-social -platform-based training than pre-social-platform-based training at P value < 0.001.

Figure (1): Shows that the total knowledge level of the studied nurses has improved post-social-platform-based teaching **about** chest tube**s** and shows also, that 24% of them had a satisfactory level of knowledge of pre-social-platform-based training that improved to 100% post- social -platform-based training.

Table (3): Illustrates that there is a highly statistically significant difference between nurses' practice pre and post-social -platform-based training about chest tube with a p-value <0.001.

Figure (2): Shows that 68% of the studied nurses had incompetent practice pre-social-platform-based training that improved and became competent post-social-platform-based training among (90%) the studied nurses.

Table (4): Demonstrates a positive significant correlation between nurses' knowledge and practices post-social-platform-based training.

Table (5): Shows that there was no statistically significant correlation between the total mean score of nurses' knowledge and practice and their age. However, there was a statistically significant positive correlation between the total mean score of nurses' knowledge and years of experience as well as the total mean score of nurses' practices and their education.

Table (1): Percentage distribution of personal data of studied nurses (no=50).

ITEMS	No. (50)	%
Gender		
Male	10	20.0
Female	40	80.0
Age		
18 <25 year	30	60.0
25 <45 year	14	28.0
45 <65 year	6	12.0
Mean +SD	24.97+8.84	

Educational Level		
Diploma education	24	48.0
Technician institute	18	36.0
Bachelor of Nursing	6	12.0
Years of experience		
Less than one year	6	12.0
1year to <5 year	32	64.0
More than 5 year	15	30.0
Attendance of previous training courses about chest tube		
Yes	0	0.0
No	50	100.0

Table (2): Mean scores of nurses' knowledge caring for children with chest tube pre and post-social-- -Media-based training

Nurse's knowledge	Pre social - platform-based training	Post social - platform-based training	P-value
Knowledge Score	18.22±4.33	32.42±1.04	<0.001**

*- independent t-test ** Significant difference at p. value<0.01*

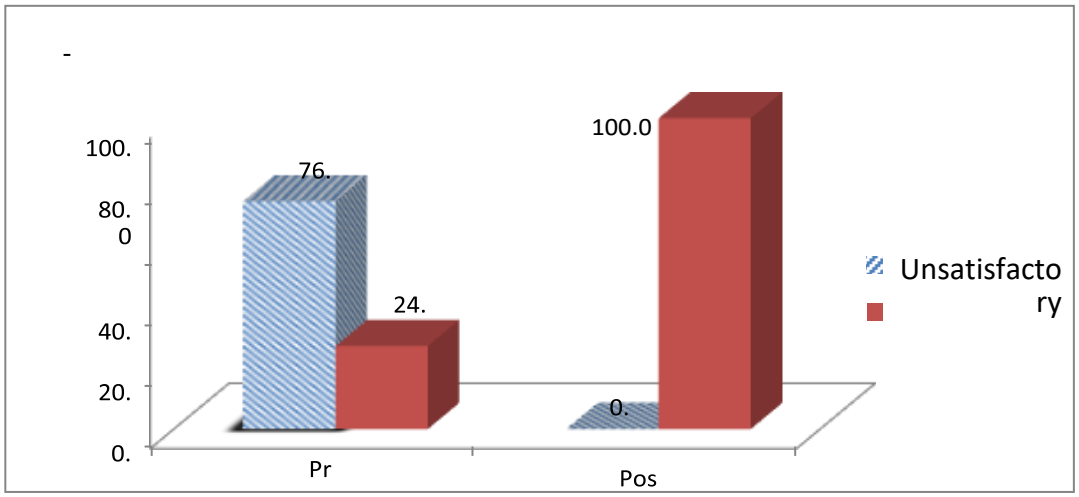

Figure (1) Total nurses' knowledge levels pre and post- social -and post-social platform-based training **about chest tube**

Table (3): Mean scores of nurses' practice about chest tube pre and social -and post-social media-based teaching (n=50)

Nurse's practice	Pre	post	T	P. value
Total practice score	49.56±2.45	90.67±3.78	-46.89	<0.001**

*- Independent t-test ** Significant difference at p. value <0.01.*

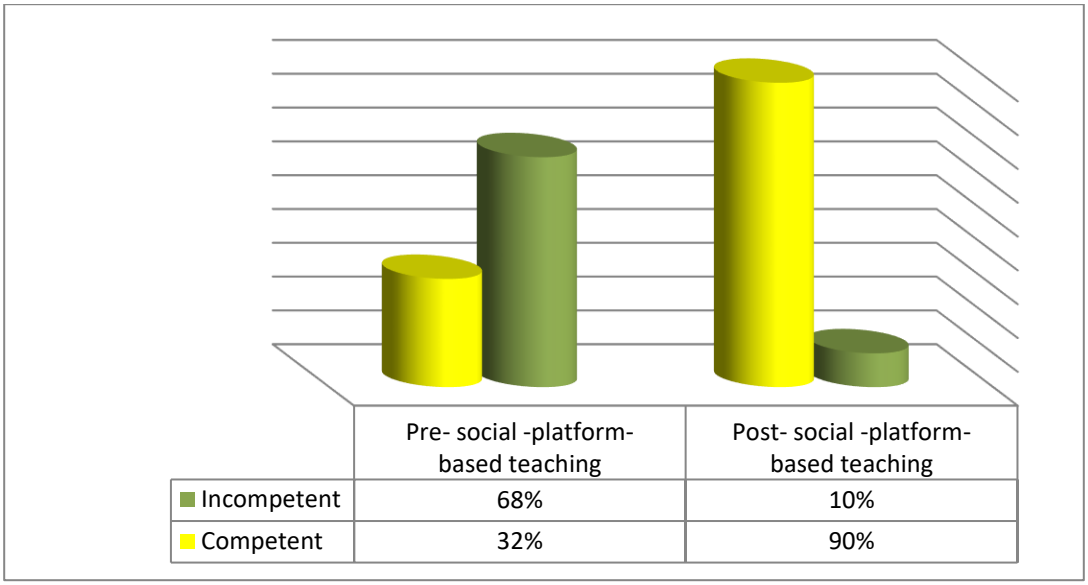

Figure (2): Total nurses' practice levels pre and post-social-media-based teaching regarding chest tube

Table (4): Correlation between total knowledge and practices regarding chest tube post-social -platform-based training (N= 50)

Items	Correlation between scores of total knowledge and practices			
	Knowledge		Practice	
	R	p	R	p
Knowledge	1		0.337	0.02*
Practice	0.147	0.276	0.278	0.03*

***. Correlation is significant at the 0.01 level (2-tailed). r= person correlation coefficient*

Table (5): Correlation between nurses' data and total means scores of knowledge and practices post social-media-based training.

Item	Total **mean score 'knowledge**		Total **mean score practice**	
	R	P	R	P
Age	.123	.423	.086	.539
Years of experience	.269	.052*	.038	.804
Education	.065	.659	.287	.036*

Discussion:

A child with a chest tube can have the best outcomes and the fewest major issues if a professional pediatric nurse has the necessary training and experience. Any educational intervention's effectiveness depends on each member of the medical team being aware of the anatomy of the chest, where to put the tube, and how these devices work mechanically and drainage-wise.

Chest tubes continue to be a popular, easy, and efficient treatment for pleural diseases and chest injuries. They are frequently used on patients who are admitted with these conditions to adult and pediatric medical and surgical wards, intensive care units, and accident and emergency rooms. Nursing care for chest drains can be administered either before or after surgery. Pre-procedural care includes obtaining informed consent, providing the patient with further pertinent information, obtaining the appropriate supplies for a tube thoracostomy, and supporting the procedure **(Kesieme et al., 2021).** Therefore, the current study's goal was to ascertain how social platform-based training affected nurses' ability to care for children who had chest tubes.

Years of experience as nurses more than three-fifths of the nurses in the current study had less than five years of experience. This conclusion was corroborated by **Lit et al. (2021**), who examined the necessity of chest drain management in-service training for nurses at Queen Elizabeth Hospital and highlighted that over 50% of the nurses had at least five years of medical experience.

The current study found that, with a mean ± SD (24.97+8.84), three-fifths of the nurses in the study were between the ages of 18 and 25. Numerous studies that examine the impact of educational programs on nurses' understanding of chest tubes and their complications, as reported in a study by **Patidar et al.,** (**2021)** validated similar findings **(Hassan et al,. 2021)**.

According to the current study, women made up the majority of the nurses under investigation. The majority of nurses were female, according to **Mohamed et al.'s (2023**) study, which was in line with this conclusion. This outcome supported the findings of **Durai (2020) and Elfeky (2021**), who reported that the majority of the samples they examined were female. The majority of nurses in Egypt are women, which may be a result of the long-held notion that nursing is a private occupation for women.

The results of the current investigation showed that about half of nurses have a diploma. The findings of Ibrahim & **Elshemy's (2020)** study, "Impact of an Educational Program on Knowledge and Practices of Nurses about Caring of Patients with Chest Tube," showed that over half of the nurses in the study had a diploma in nursing education, were also consistent with this one. This finding indicated that the nursing staff's lack of expertise and inadequate understanding in caring for patients with chest tubes—a dangerous profession—may be leading to major consequences. Nurses need to receive the proper training in managing chest drains to guarantee that patients receive competent and safe treatment.

Regarding social media-based training, the current study found that none of the nurses had received any kind of educational training related to chest tubes. This leads to a consensus with **Hassan et al. (2021**) and **Mohamed et al. (2023).** This might have to do with not having enough time for any kind of schooling. This finding was consistent with that of **Bedier et al. (2018**), who discovered that most of the nurses in their study had not taken any undergraduate courses on chest tube care after completing secondary nursing school. This finding was consistent with that **of Lit et al. (2021),** who examined the necessity of in-service training for nurses in chest drain maintenance at Queen Elizabeth Hospital. They highlighted that the majority of nurses had not attended educational lectures or workshops concerning chest drainage management.

This result was consistent with that of **Hutton et al. (2019**), who carried out a study titled "Using Simulation Models to Teach Junior Doctors How to Insert Chest Tubes: A Brief and Effective Teaching Module" and found that mistakes are frequently made when handling the chest tube and its system, primarily by the nurses and residents, as a result of their lack of experience and knowledge. Therefore, in any hospital that treats patients with chest tubes, training programs for nurses and residents should be required.

The results of the current study demonstrated improvements in nurses' knowledge mean scores about scoring, with a statistically significant difference between nurses' knowledge mean scores before and after social media-based training. According to the researchers, the benefits that social media-based

training might offer in terms of acquiring necessary knowledge may help to explain this discrepancy.

This outcome is in line with **Elsaoudy et al. (2022**). They came to the same result after evaluating the nurses' proficiency and understanding of chest tube care. This conclusion was explained and related by the researchers to the fact that the unit lacked pamphlets, manuals, or guidelines for caring for children with chest tubes and that none of the nurses had participated in any instructional programs. This justification aligned with the findings of Ibrahim & Elshemy (2020), who examined the impact of nursing education programs on the treatment of children with chest tubes and concluded that all pediatric nurses should be required to complete these programs.

The findings of **Magner et al. (2021**), who carried out a study in Ireland and discovered that approximately three-quarters of the nurses had sufficient and moderate knowledge of the management of patients with chest tubes, were somewhat consistent with these findings. **Schilling et al. (2021**) uncovered a concerningly low level of expertise among the nurses in their investigation.

This finding was in line with that of **Durai (2020**), who wrote in a research titled "Managing a chest tube and Drainage System" that most nurses knew too little about every facet of chest tube care. **Elsaoudy et al. (2022**) found that nurses need continual training and feedback regarding nursing practices, which is consistent with this finding.

According to the current study, nurses' overall level of knowledge has increased since receiving instruction about chest tubes via social media platforms. From the perspective of the researchers, this demonstrated the nurses' willingness to increase their level of knowledge by learning things by chance through social media-based training. These results were in agreement with those of **Mohamed et al. (2023) and Queiroz et al. (2022**), as well as **Kouser et al. (2023**) who carried out a study to assess how nurses' knowledge was affected by chest tube guidelines, found that nurses' understanding of how to handle children with chest tubes was adequate and moderate. Additionally, there were variations between before and after the intervention that were statistically significant.

Less than three-quarters of the nurses in the study had incompetent practices related to chest tubes before social media-based training; however, after social media-based training, the majority of the nurses in the study improved and became competent. From the researchers' perspective, this fulfilled the current study's goal and validated the effectiveness of social media-based training.

There is a highly statistically significant difference in nurses' practices before and after social media-based training about chest tubes about the nurses' practices about chest tube care. These results were in line with those of **Elsaoudy et al. (2022).**

According to the current study, nurses' knowledge and practices after social media - based training showed a strong beneficial association. From the perspective of the researchers, this illustrates the value and efficacy of social media-based teaching, which is frequently linked to enhancing knowledge and comprehension among the nurses under study and providing them with strategies to help them learn and apply quality information. The explanation for this association is that nurses' practices were improved when they had adequate information. Increased knowledge following social media-based training resulted in a rise in nurses' practices due to enough understanding, may validate this outcome. The results are consistent with those of **Eskander et al. (2019**), who found a statistically significant positive connection between knowledge and practice and showed that with improving knowledge the nurses' practice improves.

Anjum (2020) found that there was no statistically significant correlation between the total mean score of nurses' knowledge and practice and their age, but that there was a statistically significant positive correlation between the total mean score of nurses' knowledge and years of experience, as well as between the total mean score of nurses' practices and their education. These findings were

contradicted by **Mohamed et al. (2023**), who found that the majority of nurses were female and had completed nursing technical institute, and that there was a strong correlation between years of experience and nurses' knowledge. Most of the authors in all published articles regarding nurses' knowledge and practice foster and documented that, the years of experience and degree of education have great influence on the care provided to the child in any field and particularly critically ill children.

Conclusion:

Based on the current study findings the current study concluded that social -media based training has a positive effect on improving nurses' knowledge and practices caring for children with chest tube. Furthermore, there was a highly significant correlation ($P<0.01$) between total nurses' knowledge and their total practice regarding nursing management of patients with chest tube pre and post-social -media-based training.

Recommendations

Based on the current study findings the researchers recommended the following.

- **Providing** continuous in-service training for nurses caring of children with chest tube in different healthcare settings.
- Producing handbooks, pamphlets, and brochures to update nursing procedures and details on chest tube care.
- To generalize the results, the study should be repeated with additional nurses and in various settings on the nurses' performance in caring for children with chest tubes.

References:

Abuejheisheh, A. Qaddumi, J. & Darawad, M. (2021): Chest drains: prevalence of insertion and ICU nurses' knowledge of care. Heliyon, vol. (7) No (8), e 07719.

Anjum, N., (2020): A Study to Assess the Effectiveness of Self-Instructional Module on Knowledge and Demonstration of Skill Regarding Care of Chest Tube Drainage among Staff Nurses at Skims Hospitals Oura Srinagar Kashmir. Journal of Nursing and Health Science (IOSR-JNHS) e-ISSN: 2320-1959.p- ISSN: 2320-1940 Vol. (9), Issue 3, Pp.16-43

Arafa, A. Abusaad, F. & Said, D. (2022): Effectiveness of an Educational Program Regarding Care of Infants with Chest Tube on Nurses' Knowledge and Practice. Mansoura Nursing Journal, vol. (9) No (1), Pp 251–259.

Bedier N, Abo EL-Ata A, Ibrahim N. (2018): The Impact of an Educational Program on Nurses, Practice Related to Care of Patients with Chest Tube. International Journal of Caring Sciences; 9 (3): Pp:| 846.

Cheng, K. Yuan, M. Xu, C. Yang, G. & Liu, M (2019): A chest tube may not be necessary for children with thoracoscopic lobectomy. Medicine (United States), vol. (98) No (26), Pp1–5.

Clinical key for nursing (2023): pediatric nursing skills for chest tube; available at https://www.clinicalkey.com/nursing/content/nursin g_skills/63-s2.0-CCP_033

Cook M, Idzior L, Bena JF, Albert NM. Nurse and patient factors that influence nursing time in chest tube management early after open heart surgery: a descriptive, correlational study. Intensive and Critical Care Nursing. 2017 Oct 1;42:116-21.

Dewi, D. D., Kusumawati, W. W., & Ismarwati, I. I. (2019). Effect of health promotion and WHATSAPP reminder to self-efficacy of adherence consume Fe tablets, pregnant women. Journal of Health Technology Assessment in Midwifery, 2(1). https:// doi. org/ 10. 31101/ jhtam.682

Durai R., Hoque H., Davies T. (2020): Managing a chest tube and drainage system, AORN Journal, (2020), 91(2), 275-83.

Elfaki B, Mustafa H, Hassan Ahmed A. Nurses' knowledge and Practice regarding Care of Patient with Chest Drains in Sudan Heart Center, Khartoum, Sudan. IOSR Journal of Nursing and Health Science. 2019;5:2320-1940.

Elfeky H. (2021): Intensive care nurses' knowledge & practices regarding infection control standard precautions at a selected Egyptian Cancer Hospital. Journal of Education and Practice, (2021), 4 (19), 160-

74, accessed on 19-4-2015 available at http://scholar.cu. Edu.eg/?q=warda/files/7978-10149-1-pb.pdf.

Elsaoudy, N. Mahmoud, F. & Elmaged, R. (2022): Nurses' Knowledge and Practice Regarding Care of Children Undergoing Chest Tube. African Journal of Health, Nursing and Midwifery vol.(5) No (3), Pp 30-49.

Eskander, H., Morsy, W., & Elfeky, H., (2019): Intensive Care Nurses' Knowledge & Practices Regarding Infection Control Standard Precautions at a Selected Egyptian Cancer Hospital. Journal of Education and Practice, 4(19), 160-174

Gray, J. Emeritus, P. Grove, S. & Sutherland, S (2019): Burns and Grove's The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence. 5th edition, chapter 3, Saunders.

Hassan, H. & Dhakeel M. (2021): Effectiveness of an Educational Program on Nurses' Knowledge toward Prevention of Pneumothorax Attendant with Mechanical Ventilation at Intensive Care Unit in AL-Hussein Medical City Hospital in Holy Karbala Annals of R.S.C.B., ISSN: 1583-6258, Vol. (25), Issue (6), Pp 3876 - 3883.

Hassanin AA, Mohammed H, Ahmed Hassanin A, Abo-Bakr Mohammed H, Hassanin AA, Mohammed HA. Effect of an Educational Program for Nurses Working at Mansoura University Hospitals on Chest Tube Complications. IOSR Journal of Nursing and Health Science (IOSR- JNHS). 2016;5(5):34-42.

Hill, J., McGinn, J., Cairns, J., Free, C., & Smith, C. (2020). A mobile phone-based support intervention to increase use of postabortion family planning in Cambodia: Cost-effectiveness evaluation. JMIR mHealth and uHealth, 8(2). https://doi. org/ 10. 2196/ 16276

Hutton I A., Kenealy H. and Wong C. (2019): Using simulation models to teach junior doctors how to insert chest tubes: a brief and effective teaching module. Intern Med J; 38(12): 887–891.

Ibrahim N (2018): Assessment of the nurses' performance in providing care to children undergoing chest tubes in Suez Canal University hospital. Unpublished master Thesis, Faculty Of Nursing, Suez Canal University. Egypt.

Ibrahim R, Elshemy M. (2020): Impact of an Educational Program on Knowledge and Practices of Nurses about Caring for Patients with Chest Tube. IOSR Journal of Nursing and Health Science (IOSR-JNHS); 5 (6) : Pp: 2320–1940

Ibrahim, R. & Elshemy M. (2020): Impact of an Educational Program on Knowledge and Performance of Nurses about Caring for Child with Chest Tube. IOSR Journal of Nursing and Health Science (IOSR-JNHS); vol(5) No (6), Pp: 2320– 1940

Kagan, S. Nahum, E. Kaplan, E. Kadmon, G. Gendler, Y. & Weissbach, A. (2021): Persistent pulmonary air leak in the pediatric intensive care unit: Characteristics and outcomes. Pediatric Pulmonology, vol. (56) No (8), Pp 2729–2735.

Kesieme EB, Ocheli EF, Kaduru CP, Kesieme CN. (2021): Profile of chest trauma in two semi-urban university hospitals in Nigeria. Prof Med J.;6:43–61.

Kouser, S. Ali, A. & Yaqoob, A. (2023): Effect of Chest Drain Management Guidelines on Knowledge and Practice Among Nurses at Services. Journal of Physical Science, vol. (34) No (3), Pp 543- 555.

Lee Ventola, C. (2014): Social Media and Health Care Professionals: Benefits, Risks, and Best Practices ; P T. 2014 Jul; 39(7): 491-499, 520.

Lit M., Lee K H. and Chan J. (2021): The need for nurses to have an in-service education of chest drain management. Available at Chest Journal.Chestpubs.Org. Retrieved on 4/12/2021.

Magner C, Houghton C, Craig M, Cowman S. (2021): Nurses' knowledge of chest drain management in an Irish Children's hospital. J Clin Nurs 2021; 22: 2912-22. [Cross Ref]

Mohamed, A., Mahmoud, F., & Abdel Salam, A., A. (2023): Effect of Educational Intervention on Nurses' Performance Regarding Care of Critically Ill Children with Pneumothorax Journal of Nursing Science - Benha University ISSN 2682 – 3934 Vol. (4), No. (2), Pp 203- 235.

Mohamed, S., & Ali Ibrahim, R. (2021): Effect of self-learning module on nurses' performance regarding the care of

Patients with chest tube. Egyptian Journal of Nursing and Health Sciences, 2(2), 249- 276.

doi: 10.21608/ejnhs.2021.196029.

Mohammed MA, el Prince Mahmoud M, Sleem HA, Shehab MS. Assessment of the Nurses Performance in Providing Care to Patients Undergoing Nasogastric Tube in Suez Canal University Hospital. International Journal of Caring Sciences. 2017 May 1;10(2):915.

Mohammed, H. & Farag, A. (2019): Effect of Self- Instructional Module on Knowledge and Practice of Nursing Students Effect of Self- Instructional Module on Knowledge and Practice of Nursing Students Regarding Tube Feeding Insertion. Journal of Health, Medicine and Nursing, vol. (1), No (1), Pp 1–14.

Ouedraogo, I. (2021). Improving health literacy in rural communities in Africa using mobile technologies for an Inclusive Health Service. 2021 Eighth International Conference on eDemocracy & eGovernment (ICEDEG), 221–222. https://doi. org/10. 1109/ icedeg52154. 2021.9530741

Patidar, D. Patidar, K. & Patel, A. (2021): A Study to assess the effectiveness of Self-Instructional module on Knowledge about practice regarding the management of children with chest tube drainage among nurses working in selected hospitals of North Gujarat. International journal nursing education and research, vol.(9), No (1), Pp 67- 68.

Porcel, J (2018): Chest Tube Drainage of Pleural Space: A Concise Review for Pulmonologists. Tuberculosis and Respiratory Diseases, vol.(81), No (2), Pp 106–115.

Queiroz, P. & Cruz, I. (2022): Nurses' knowledge of chest drainage management: An integrative review. Journal of Specialized Nursing Care, vol. (14) No (1), Pp 34-54.

Schilling J., Holmes H., and Robinson J. (2021): Lippincott's Nursing procedures, 5th ed., Philadelphia, Lippincott Williams & Wilkins, (2021), 727-33.

Seyma, Z. Meral Y. & Atye E, (2021): Nurses' Knowledge Levels About the Care of the Children with Chest Tube. International Journal of Caring Sciences, Vol. (14) No (2), Pp 128-140.

Soge VS, Ramesh A, Sahara V. Efficacy of Planned Teaching Regarding Care of Patients with Chest Tube Drainage among Nurses.

Supri, A. Rachmawaty, R. & Syahrul, S. (2019): Nurses' Performance Assessment Based On Nursing Clinical Authority: A Qualitative Descriptive Study. Journal Of Nursing Practice, vol.(2), No (2), Pp 80–90.

Tarhan, M. Akbas Gokduman, S. Ayan, A. & Dalar, L. (2019): Nurses' Knowledge Levels of Chest Drain Management: A Descriptive Study. Eurasian Journal of Pulmonology, vol. (18) No (3), Pp 153–159.

Taylor, A. Bates, K. & Kipps, A. (2018): Variability in pediatric cardiac postoperative chest tube management. Cardiology in the young, vol. (28) No (12), Pp1471–1474.

Viswanath, K., Ramanadhan, S., & Kontos, E. Z. (2020). Mass media. Macrosocial Determinants of Population Health, 275–294. https://doi.org/10.1007/978-0-387-70812- 6_13

Zhao, Z., Zhang, T., Yin, X., Zhao, J., Li, X., & Zhou, Y. (2019): Update on the diagnosis and treatment of tracheal and bronchial injury. Journal of thoracic disease, 9(1), E50.