The impact of educational guidelines-based video-assisted on nurses' performance regarding pediatric blood transfusion-dependent β-thalassemia major

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Abstract---Background: Patients with thalassemia major require significant setup management of routine blood transfusion each three to four weeks, and chelation treatment to push out iron from the body makes a refinement that creates well again the result. Aim: To determine the impact of educational guidelines based on video-assisted on nurses' performance regarding pediatric blood transfusion-dependent β- thalassemia major. Methods: Design: To carry out the current investigation, a quasi-experimental research design was employed. Settings: The study was carried out in inpatient and outpatient pediatric departments affiliated with Mansoura University Hospitals. Subjects: All 50 nurses who were included in the convenient sample. Tools of data collection: Tool 1: A structured interviewing questionnaire, consisting of three parts; part 1: Nurses' demographic data, part 2: and Nurses' knowledge Questionnaire; Tool 2: Routine Blood Transfusion Knowledge Questionnaire; and Tool (3): Nurses' observational checklists. Results: Following educational guidelines based on video-assisted, a considerable improvement was found in nurses' overall knowledge and practices addressing pediatric blood transfusion-dependent -thalassemia major. Additionally, there was a correlation between all nurses' knowledge and practices after the implementation of the educational guidelines based on video-

assisted learning. Conclusion: Conclusion: The research hypotheses are supported, and educational guidelines based on video-assisted have improved nurses' knowledge of and practices in pediatric transfusion-dependent -thalassemia major. Recommendation: For nurses caring for children with transfusion-dependent -thalassemia major, the study advocated using educational guidelines based on video-assisted practice to increase their knowledge and ensure competency.

Introduction

A hereditary, autosomal recessive condition with a higher prevalence in some parts of the world is beta-thalassemia. It results from a deficiency in one or more genes necessary for the production of globin chains, which reduces the capacity of red blood cells to carry oxygen. Thalassemia and its treatment have negative effects and problems, such as growth retardation, shape alterations, anomalies in the bones, and damage to the heart, lungs, liver, and endocrine organs due to anemia and iron excess (Mikael & Al-Allawi, 2018).

It happens when there is insufficient or decreased formation of beta-globin chains, which causes an excess of unbound alpha chains to precipitate in erythroid precursors, ultimately leading to inefficient erythropoiesis. When a child under the age of two exhibits severe jaundice and microcytic hypochromic anemia, it is typically suspected. Patients with thalassemia major often get regular blood transfusions every 4–6 weeks to treat anemia, reduce ineffective erythropoiesis, and promote normal growth and function. Regular blood transfusions will inevitably result in iron excess. Iron builds up in several organs, causing hypogonadism, hypothyroidism, hypoparathyroidism, hyperglycemia, hepatic fibrosis, and cardiac failure if addressed (Tarım & Oz, 2022).

The management of thalassemia major requires prompt treatment of iron excess with oral or subcutaneous chelators. The only treatment for major thalassemia is bone marrow transplantation. With a carrier incidence of 9–10.2%, beta thalassemia major is thought to be the most prevalent chronic hemolytic anemia in Egypt. The sickness places a heavy financial and psychological burden on the families of those affected and the Egyptian government (Mariam et al., 2022).

It is an issue in healthcare systems with limited resources and requires significant resources as well. Planning effective preventative programs and ensuring patients' compliance with recommended therapy depends heavily on patients' and families' comprehension of the genetic basis of the condition, its clinical range, and lifelong dedication to transfusion and chelation. A reduction in thalassemia occurrence and, consequently, a reduction in the financial burden on the government, may arise from a better understanding of the condition (Filabadi et al., 2020).

The major community problem is thalassemia over the world which is the most common inherited disorder (Bongay & Kynoch, 2020). This is described as a fault in the genes which are accountable for hemoglobin production. Hemoglobin contains alpha and beta chains. In case of intrinsic changes wait for the course of activity of beta cell chains at that point beta thalassemia happens which joins the scattered progression of withdrawn blood elements (Origa, 2017). Thalassemia major patients are born normally at birth but later they develop serious falls in HB and develop anemia in the first year of their life (Viprakasit et al., 2018).

Thalassemia major patients suffering from heart failure can die between 20 to 30 years. Thalassemia is a challenge for thalassemia patients and a thriving worry framework. Because these patients need a lifelong treatment of transfusion and chelation therapy. Annual births of 5000 children every year in Pakistan. The estimated carrier rate is 11%, with 9.8 million carriers in the total population. One lakh is the most commonly expected figure of thalassemia major patients who are dependent on blood transfusion. This adds to a yearly loss of 1.46 million to 2.92 million disability-adjusted life years which leads to a vast financial burden internationally (Ghafoor et al., 2021) The estimated life of thalassemia major children is approximately ten years in our country which is too much low from the international standard (Khaliq, 2022).

The reason for this short life expectation can be inappropriate nursing knowledge and nursing practices. The foundation of thalassemia major patient's care is transfusion of blood. Children need to take basic movements for the improvement of nursing care of thalassemia major patients. The rationale of treatment is double toward move forward the shortcoming and to cover the inadequate erythropoiesis. Mistakes and insouciantly organization of patients during a transfusion can cause serious hazards to individuals with thalassemia major (Motta et al., 2020).

Nurses are responsible for the care of patients with thalassemia major and this is the basic part of their duty. Nurses have to outline an understanding of the patient's needs. Quality of nursing care includes that things have been done right, moving forward almost to thalassemia patients and the community. The nurse plays a critical role in thalassemia major pediatric patients care with disorders of hemoglobin (Patterson et al., 2022).

This disease is very tough to manage properly and is life-threatening if it is left untreated. However, this situation can be managed effectively if we share professional knowledge and expertise about its prevention and treatment (Darvishi-Khezri et al., 2021).

Nursing care can subsequently be seen to be obliging sincerely and skillfully to fulfill the necessities of thalassemia major pediatric patients. Lack of education is a barrier to optimal care, which should be addressed in thalassemia units (Abolwafa et al., 2019). Thalassemia major pediatric patient nurses should be aware of the disease and management because nurses play an important role in every healthcare team for caring pediatric patients (Jain et al., 2021).

Blood transfusions are a key component of treatment for those with thalassemia major and a large proportion of those with intermediate. Both anemia and ineffective erythropoiesis can be treated with transfusions. Most of the significant development, skeletal, and neurological problems associated with thalassemia major are prevented by chronic transfusions. On the other hand, transfusion-related issues are a significant source of morbidity once they manifest (Elalfy et al., 2019; Kwiatkowski, 2019). Standards must be established and upheld to provide a safe and rational approach to the use of blood transfusions in the treatment of these uncommon disorders. The choice to begin transfusions is made when low hemoglobin cannot be treated. Anaemia should not be the sole factor considered before starting a continuous blood transfusion (Centers for Disease Control and Prevention, 2021).

In the care of children with -thalassemia, the pediatric nurse can play a crucial role. Nurses frequently follow standardized treatment plans while offering experienced, knowledgeable assistance and encouragement. Nurses in particular should make certain that children and their parents are informed about their disease and the available treatment options (Cappellini et al., 2020).

Thalassemia care requires specialized education and training for all pediatric nurses. Pediatric nurse practitioners have received specialized training in managing children with -thalassemia, meeting their individual needs, and counseling the entire family on preventive care and serious side effects. Under the direction of a hematologist, pediatric nurse practitioners evaluate each child with thalassemia during routine transfusion sessions (Kiani et al., 2016). A nurse oversees chelation therapy compliance and offers continuous education. Additionally, they support the family with the diagnosis and treatment and locate all required resources (Baraz et al., 2016).

The utilization of video-assisted teaching techniques leads to a lot of research opportunities for novel awareness-raising strategies and the development of good advances in knowledge. Staff nurses might develop and enhance their current skills and knowledge by using video education during training, which would raise the quality of care (Kavitha, 2016).

Because nurses work varied shifts and are unable to participate in face-to-face teaching sessions, continual education, and practice improvement are essential. As innovative approaches to provide nurses with continuous education, online learning, and video-assisted training modules have emerged (Safwat & Khorais, 2018).

Nurses' knowledge and practice are improved through the use of a variety of teaching strategies, including lectures, demonstrations, discussions, self-education, and video-assisted teaching strategies. Video is the electronic process of gathering, capturing, storing, sending, and recreating a series of still images that depict scenes in motion. Because visuals may communicate without the need for words, it also helps to break down linguistic barriers (Balasubramanian et al., 2018).

The video-assisted teaching method aids nurses in learning more successfully since it employs sight, voice, and motion to provide simple clarifications of complex themes and issues. It can also act as a bridge across educational divisions and convey information in ways that verbal descriptions or speaking alone cannot. On the other hand, the movie will be useful for nurses who have trouble reading (Devi et al., 2019). Additionally, one of the most important emerging technologies for nurses, especially those who conduct challenging procedures, is video-assisted teaching (Hassan, 2019).

Significance of the study

Major -thalassemia is a common health problem in Egypt; it is estimated that 1 in every 1.5 million live births will result in a child with -thalassemia. While the -thalassemia carrier rate was estimated to be between 9 and 10%. Children and their families who have B-thalassemia must deal with serious medical, social, psychological, congenital, and financial repercussions (Tubman et al., 2015). Children's life is affected in a variety of ways by physical conditions such as chronic anemia, bone deformities, developmental abnormalities, short stature, and delayed physical maturity. These conditions also come with unpleasant, time-consuming treatments (Wong et al., 2020).

Thalassemia major patients need a significant amount of routine blood transfusions every three to four weeks, and chelation therapy to remove iron from the body improves the outcome (Bongay et al., 2021). For thalassemia sufferers and their thriving worry framework, thalassemia is a struggle. Because these people require chelation treatments and transfusions for the rest of their lives (Viprakasit & Ekwattanakit, 2018). thalassemia disease affects between 1000 and 1.5 million live babies annually. Children with transfusion-dependent thalassemia should get blood transfusions once or twice each month, depending on the severity of their disease. They might have to spend the entire transfusion day in the hospital as a result, which would interfere with their ability to learn and socialize (Adekile et al., 2020).

The need for improved nursing teaching and learning methodologies has been significantly impacted by technology. For the education of varied skills, multiple tactics and contemporary methods are needed. Video-based education is therefore seen as a suitable teaching strategy. An advantage of video-based education is that the presenter's voice may be heard. There are also observable figures, motions, images, and demonstrations (Rubi & Rani, 2016).

Operational definition

Nurses' performance: it included knowledge and practices of the nurses.

Educational guidelines based on video-assisted: Video-assisted is defined as a strategic teaching approach to using videos – either educational or conceptual – to improve a student's comprehension, cognitive ability, or social-emotional skills.
Aim of the study

The present study aimed to determine the impact of educational guidelines based on video-assisted on nurses' performance regarding pediatric blood transfusion-dependent β- thalassemia major through:

1. Examining nurses' knowledge of pediatric -thalassemia major, a condition dependent on blood transfusions
2. Examining the nurses' practices of blood transfusions in children with β-thalassemia major.
3. Creating and implementing educational guidelines based video-assisted on nurses' performance for pediatric blood transfusion-dependent β-thalassemia major nurses based on their actual needs.
4. Analysing the effect of educational guidelines based video-assisted on nurses' performance on their knowledge and practices of pediatric blood transfusion-dependent β-thalassemia major.

Research hypotheses

H1: Post-implementation knowledge of pediatric transfusion-dependent β-thalassemia major is predicted to have satisfactory knowledge among nurses who received training instructions based on video-assisted nursing performance than pre-implementation knowledge.
H2: Post-implementation pediatric transfusion-dependent β-thalassemia practices are expected to be more adequate for nurses exposed to educational guidelines based on video-assisted than before.

Subjects and Methods

Research design:
The current investigation was carried out using a quasi-experimental research design. To investigate the true efficacy and safety of non-randomized therapies, a sample was randomly assigned to one of multiple therapy groups (Maciejewski, 2020).

Setting

The study was conducted in the pediatric inpatient and outpatient clinics affiliated with Mansoura University Hospitals, which are found on the ground floor of the clinic building. One room is used by the nursing staff and patients for examinations. Additionally, there was a pediatric patient waiting area, a lecture room with enough seats, and the outpatient pediatric department at Mansoura University Hospital, which is situated on the second floor of the facility. There are four rooms in total. In the first room, there were six beds; in the second, eight beds; in the third, four beds; and the fourth, four beds. Due to the prior setting's high prevalence of pediatric patients and its serves the nation's most populous region, these settings were chosen.

Subjects
All 50 nurses who were included in the convenient sample were employed in the previously mentioned settings.

Tools of data collection:
Tool 1: A structured interviewing questionnaire was designed by the researchers in simple Arabic language after reviewing related literature (Motta et al., 2020 and Jaing et al., 2020); it consisted of two parts;

Part 1: Nurses' demographic data:
It included information related to nurses' demographic data such as age, gender, academic qualifications, years of experience, and previous training.

Part 2: Nurses' Knowledge Questionnaire:
It included information related to nurses' knowledge regarding pediatric transfusion-dependent β-thalassemia major. There were 22 multiple-choice questions in total; there were 14 questions with a single correct answer and 8 questions with multiple correct answers for a total of 36 correct answers. Five separate subjects encompassing various facets of thalassemia major as a disease and its treatment made up the questionnaire. Three questions about thalassemia symptoms and signs, Q4, Q5, and Q15; three questions about thalassemia treatment options, Q6, Q7, and Q16; two questions about prevention, Q8 and Q9; seven questions about the risks of blood transfusions, Q10, Q11, Q14, Q17, Q18, Q19, and Q20; and four questions about iron overload and chelation therapy, Q12, Q13, Q21, and Q22.

Scoring system:
The correct response to each question received a score of 1, while the incorrect response received a score of 0. Each area of knowledge was then added together, and the final score for each patient or parent was determined.

Tool 2: Routine Blood Transfusion Knowledge Questionnaire (RBTKQ)
It was created by Hijji, et al. (2012) and used to test nurses' practical understanding of blood transfusion. It had 30 items to assess nurses' understanding of blood transfusion (2 true/false, 18 multiple-choice questions, and 10 open-ended questions). It aims to evaluate nurses' knowledge of the collecting of blood bags from the blood bank, the preparation of children before transfusion, nursing duties before and following blood transfusions, as well as any issues.

Scoring system:
After completing the interview questions and the nurses' knowledge having been verified by a model key response, the scoring system for nurses' knowledge was evaluated. Correct answers received a score of 1, while those that were incorrect or unknown received a score of 0. A total of 0 to 30 points might be earned. A score of more than 75% on the total knowledge test for nurses was deemed satisfactory, whereas a score of less than 75% was deemed unsatisfactory.

Tool (3): Nurses' observational checklists
It was utilized to evaluate the nurses' practices concerning pediatric **β**-thalassemia major, which is dependent on blood transfusions.

Blood transfusion observational checklist

a score of (1) for correctly completing the step and a score of (0) for not completing it. Total practice scores translated to a percent score, with a score of 85% or higher indicating competent practice and a score below 85% indicating incompetent practice.

It was adopted by de Mattia, (2016) and Cowell, (2009). It was used to evaluate nurses' procedures for caring for children receiving blood transfusions. The 29 steps were broken down into nurses' procedures before blood transfusion (11 steps), during blood transfusion (10 steps), and after blood transfusion (8 steps).

- Vital sign measures and observational checklists for the administration of intravenous iron chelation therapy were adopted from Taylor et al., (2008).

Nursing practice scoring system:
A score of (1) for correctly completing the step and a score of (0) for not completing it was scored. Total practice scores translated to a percent score, with a score of 85% or higher indicating competent practice and a score below 85% indicating scoring practice.

Procedures Preparatory phase:
The researchers created the videos that were employed as study intervention tools by creating books, evidence-based articles, journals, and publications of line of reference. Additionally, they looked at regional and global literature on pediatric transfusion-dependent major -thalassemia. This phase lasted from the start of March 2021 through the end of April 2021.

Content validity:
A panel of five experts, comprising two experts in the field of pediatric nursing, two experts in community health nursing and one expert in the field of pediatric oncology, was assembled to confirm the study tools' content validity. The experts also verified the study tools' structure, layout, consistency, accuracy, and relevance. By the panel's ruling, no changes were made to ensure that the sentences were clear and acceptable for the subject.

Tools' reliability:
The Cronbach alpha () reliability coefficient was used to assess the tools' dependability. It was 0.757 for the questionnaire, showing acceptable reliability and internal consistency (DeVellis, 2003), and 0.86 for the nurses' observational checklists.

Ethical considerations:
Before beginning the study, official approval was acquired from the setting' directors. After being informed of the nature and purpose of the study and receiving their verbal agreement, all of the study's nurses agreed to participate in it. They had the right to resign from the study at any moment, and confidentiality was guaranteed throughout the whole research procedure.

Pilot study:
To determine the clarity of the tool items, evaluate their clarity, find any barriers that might prevent data collection, and determine the applicability of the tools,

the pilot study was conducted on 10% of the study population (6 nurses) over one month (June 2021). The knowledge questionnaire was modified, adjusted, and compiled in its final version in light of the results of the pilot study. No changes were made to the study tools in response to the pilot research's findings, and participants from the pilot study were included in the study sample.

Fieldwork:
Fieldwork: From the beginning of July 2021 to the end of December 2021, data were collected for 6 months. Three days per week, during the morning shift, the researchers were accessible. The following phases were used to apply the video-based educational guidelines:

Assessment phase:
Meeting the examined nurses was the first step in this phase. The researchers introduced themselves to the nurses at the beginning of the interview and discussed the nature and purpose of the study as well as the content of the training guidelines based on video-assisted. A systematic interviewing questionnaire was used to evaluate each nurse's knowledge of pediatric transfusion-dependent -thalassemia major (pre-educational guidelines-based video-assisted intervention). (tool 1 and tool 2). The average completion time for both tools was between 20 and 30 minutes. While this was happening, the researchers evaluated the practices of the investigated nurses concerning pediatric transfusion-dependent - thalassemia major during their real interactions with children; this process took around four weeks. Then, ten groups of five nurses each were formed from the studied nurses were divided into. It took a month to complete this pre-testing session (knowledge and practice) (July 2021).

Planning phase:
The researchers created the films after reading the relevant literature and taking into account the needs found during the assessment stage. Its goal was to enhance nurses' understanding of and clinical care for children with transfusion-dependent β -thalassemia major

The researchers created the videos used in the current investigation by following the methods below:
  1. A review of the research and gathering of data.
  2. Content preparation and organizing.
  3- Writing the video screenplay in order of appearance.
  4 Do the story research.
  5. Taking video recordings.
  6 Videos 'editing
  7. Assessing the videos.

1- A review of the research and gathering of data:
  Before starting the educational guidelines-based video-assisted intervention, a thorough literature research from textbooks, journals, online sources, and magazines was conducted to produce the films for children with pediatric transfusion-dependent -thalassemia. The review of the literature provides a critical summary of the subject of interest. Additionally, significant

consideration was given to making sure the information was correct, current, properly organized, and clear.

2- Content preparation and organizing:
According to the goals of the study, the film's content was created and arranged under numerous headings.

3- Writing the video screenplay in order of appearance:
By the planned contents, a script was created. It featured every scene from the videos, including the purpose, goals, guiding principles, and procedures of major blood transfusion. A script for a video serves as a form of map or blueprint for its content.

4- Do the story research:
The researchers conducted interviews with nurses; while speaking with them, they used open-ended questions to record their knowledge and care practices. Notate the areas where they are lacking knowledge by observing them.

5- Taking video recordings:
- According to the prepared script, the researchers recorded the PowerPoint presentation for the theoretical portion of the video and the practical portion of the video in a clinical lab setting.
- The theoretical and practical films get off to an engaging and stimulating start and satisfy the learning goals.
- All steps of the pediatric blood transfusion procedure were accurately and straightforwardly explained in the films using language appropriate for nurses of all educational levels.
- The key points of each video's material were outlined at the conclusion.

The video includes sections.
- The video's technical quality was respectable.
- Each video's length and tempo are appropriate.
- The video satisfies the research objectives.

6 Videos 'editing
Editing videos involves rearranging and modifying video clips. The objectives of editing are to eliminate unnecessary video, select the best video, and establish a rhythm. Give the video a specific aspect, change the style, tempo, or mood, add effects, graphics, and music, and then watch and record notes. The addition of titles, music, sound editing, color correction, and effects. A professional in video editing worked on the prepared videos.

6- Assessing the videos:
Three pediatric nursing professionals reviewed the videos. Their suggestions, opinions, and recommendations were taken into consideration and made.

The general objectives of the educational guidelines-based video-assisted intervention were to improve nurses' knowledge and practice regarding pediatric transfusion-dependent β -thalassemia major.

Specific objectives:

The nurses under study were able to: follow the completion of the educational guidelines-based video-assisted intervention

- Define -thalassemia major, a list of its causes, symptoms, and signs of occurrence, and mention how to prevent it.
- Describe thalassemia major treatment for thalassemia major.
- Clarify blood transfusion
- Explain the value of blood transfusions;
- Recognise when transfusions are indicated and when they are contraindicated
- Describe blood transfusion principles.
- List the risks of pediatric B-thalassemia blood transfusions.
- Detail blood transfusion preparation
- Display blood transfusion procedures in action.
- Outline the measures taken before, during, and after the blood transfusion. Discuss IV iron chelation therapy, vital sign monitoring, and nursing care procedures before, during, and after blood transfusions. Mention safety measures used during blood transfusions.
- Use infection prevention techniques after receiving blood transfusions.

Implementation phase:

Five sessions spread over four months, starting in August 2021 and ending in November 2021, were used to complete the implementation phase. The study objectives were presented in five videos, each of which had five video sessions. There were two movies for the theoretical portion and three videos for the practical portion. Each video session saw them divided into ten groups of five nurses. The date, time, location, subjects, and length of each video session were all listed on a schedule made specifically for nurses. Three days a week during the morning shift, each theoretical and practical session's video session lasted between 40 and 45 minutes. The understanding of the main of -thalassemia was the emphasis of the theoretical video sessions.

The researchers kept repeating the knowledge they had learned, responding to any inquiries, and providing comments. A laptop and data show was used to project the video for the nurses. On the same three days, the practical sessions began at 12.30 PM and ran until 1.30 PM. During the practical sessions, the examined nurses were shown how to do the procedures connected to nursing care practices pre, during, and post blood transfusion as well as how to measure vital signs and provide IV iron chelation therapy. With the use of videos, educational instructions are explained in a way that is suitable for nurses, using clear and easy language to clarify complicated concepts. Additionally, give the nurses the information they require when they request it interactively. In this study, sharing was improved by the application of reinforcement and motivation during video sessions.

Contents of each video in all sessions:
The first theoretical video session focused on:
- Introduction to β -thalassemia major
- Definition of β -thalassemia major

- Causes of β -thalassemia major
- Symptoms of β -thalassemia major
- Prevention of β -thalassemia major
- Treatment of β -thalassemia major

The second theoretical video session focused on:
- Definition blood transfusion
- Value of blood transfusion
- Indication and contraindication of blood transfusion
- Blood transfusion principles
- Precautions of blood transfusion during β-thalassemia major
- Risks of blood transfusion for pediatric B-thalassemia major

The third practical video session focused on:
- Blood transfusion preparation
- Blood transfusion procedures
- Measures taken before, during, and after the blood transfusion.

The fourth practical video session focused on:
It included practices of IV iron chelation therapy, vital sign monitoring, and nursing care procedures pre, during, and post-blood transfusions

The fifth practical video session focused on:
Safety measures used during blood transfusions and infection prevention techniques after receiving blood transfusions. Real-life simulations were practiced while watching sessions by educational guidelines that were based on video-assisted demonstration and practice, strengthening the abilities that were learned there. In addition, nurses who participated in these simulation sessions learned the value of cooperation and teamwork. All videos were supplied on a flash drive to nurses. Each nurse's email was used to formally advertise the video.

Evaluation phase:
The nurses' knowledge and practices were assessed following the adoption of educational guidelines based on video-assisted supported video. This phase, which lasted around a month (December 2021), reevaluated the examined nurses using the same tools used in the pretest.

Statistical analysis

Using a personal computer, the collected data from the study nurses were arranged, updated, coded, and input. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 20.0. For qualitative factors, data were presented using frequencies and percentages, and for quantitative variables, means and standard deviations. The mean scores of the examined nurses' knowledge and practices before and after the implementation of an educational guidelines-based video-assisted intervention were compared using quantitative continuous data and a t-test to determine whether there were any significant differences. The knowledge practices and features of the nurses under study were compared using Pearson correlation analysis. The study's hypotheses are tested using Chisquare. At p-values <0.001, a statistical difference was judged to be

highly significant, one that was statistically significant at p-values <0.05, and none that was statistically significant at p-values > 0.05.

Results

According to Table 1, 64% of the nurses in this study were between the ages of 30- to 40 years old. The mean age of nurses in this study was 24.23± 4.98 years. There were 50 nurses in total; 6 percent of them were men, and 94% were women. 42% of the nurses who were part of the study were graduates of a technical nursing institute. Of the 54% of the nurses who participated in the study, the average experience years ranged from 6 to 10 years. Regarding attendance at training sessions focusing on -thalassemia, 80% of the nurses did not attend any sessions.

Table 2 shows that, compared to pre-educational guidelines-based video-assisted, a high percentage of the studied nurses had high correct responses on questions about pediatric transfusion-dependent -thalassemia major and blood transfusion knowledge. There was also a significant pre/post-educational guidelines-based video-assisted knowledge difference, with a statistical significance level of P<0.05.
Figure 1 shows that while 94% of the nurses in the study had satisfactory levels of knowledge regarding post-educational guidelines based on video-assisted, 60% of them had unsatisfactory levels, which demonstrated the success of this intervention.

According to Table 3, the nurses who participated in the study had higher mean scores for practices related to pediatric transfusion-dependent -thalassemia major after receiving video-assisted education than they had before, which was 37.88±12.78. Additionally, nurses' practices regarding blood transfusion and the major disease thalassemia were extremely significant (<P 0.05).

Figure 2 depicts nurses' overall practices for pediatric transfusion-dependent -thalassemia major and blood transfusions before and after educational guidelines-based video assistance. It shows that (80%) of the nurses in the study had incompetent practices before such assistance, while (92%) of them had competent practices after such assistance.

Table 4 shows that, at P <0.05, there was a statistically significant positive correlation between the total knowledge scores of nurses and the total practice scores regarding pediatric transfusion-dependent -thalassemia major and blood transfusion pre/post-educational guidelines based video-assisted.

Table 5 shows that there was a statistically significant relationship between the total knowledge and practice of the examined nurses and their demographic information, including age, academic qualification, years of experience, and prior training, both before and after educational guidelines based on video-assisted intervention (P < 0.05).

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Table 1: Demographic characteristics among the studied nurses (n=50)

Variables	N	(%)
Age (in years)		
20 - <30	18	36.0
30 - <40	32	64.0
Mean±SD	24.23±4.98	
Gender		
Male	3	6.0
Female	47	94.0
Educational Level		
Diploma in General Nursing	15	30.0
Technical Institute in nursing	21	42.0
Bachelor of Science in Nursing	14	28.0
Master's degree	1	2.0
Years of experience		
1-5	11	22.0
6-10	27	54.0
Above 10	12	24.0
Attendance to training courses regarding β-thalassemia major		
Yes	40	80.0
No	10	20.0

Table 2: Comparison between the correct responses of the nurses' knowledge of pediatric transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based on video-assisted

Item	Pre-educational guidelines based on video-assisted	Post-educational guidelines based on video-assisted	P-value
1. A hereditary condition, beta thalassemia major	28(56%)	50(100%)	.005**
2. The amount of red blood cells decreases as a result of beta-thalassemia.	20(40%)	50(100%)	.001**
3. Beta thalassemia's main symptoms start to manifest a few months after delivery.	21(42%)	50(100%)	.001**
4. Growth and physical activity are seriously impacted by beta thalassemia	22(44%)	50(100%)	.001**
5. Beta thalassemia major leads to splenomegaly.	23(46%)	48(96%)	.015*
6. The primary method of care for beta thalassemia major is blood transfusion.	25(50%)	45(90%)	.021*
7. Patients with beta-thalassemia major may need to have their spleens removed.	27(54%)	46(92%)	.009**
8. If both parents are carriers, there is a 25% chance that the child may be born with thalassemia.	23(46%)	50(100%)	.003**
9. Genetic testing and counseling should be conducted before marriage to prevent beta thalassemia major.	30(60%)	45(90%)	.001**

10. To prevent febrile reactions during transfusion, filtered blood should be utilized.	26(52%)	47(94%)	.001**
11. To reduce the risk of allergic responses from blood transfusions, wash the blood.	29(58%)	50(100%)	.001**
12. Desferal is administered subcutaneously over 8–12 hours using a pump.	30(60%)	44(88%)	.001**
13. Ferritin level is a good indicator of iron overload	22(44%)	41(82%)	.001**
14. Fever 15. Thalassemia's main symptoms include jaundice. Complications from blood transfusions are frequently associated with fever.	27(54%)	40(80%)	.001**
15. Pallor is one sign of serious thalassemia.	24(48%)	50(100%)	.001**
16. Patients with thalassemia major should be given folic acid tablets to maintain their health.	21(42%)	48(96%)	.001**
16. Patients with thalassemia major should have iron chelation therapy to maintain their health.	20(40%)	45(90%)	.001**
17. Blood transfusion complications can happen as soon as the transfusion begins.	19(38%)	50(100%)	.001**
17. Blood transfusion problems can develop after the transfusion.	20(40%)	43(86%)	.001**
The Hepatitis C virus is one of several viruses that can be spread via blood transfusions. Hepatitis B virus is among the viruses that can be spread via blood transfusion.	21(42%)	50(100%)	.001**
18. The human immunodeficiency virus (AIDS) is one of the viruses that can be spread by blood transfusions.	22(44%)	46(92%)	.001**
19. Hypotension is one of the acute hemolytic response symptoms.	24(48%)	50(100%)	.001**
Fever is one of the signs of an acute hemolytic reaction (19), as is black urine (19).	25(50%)	40(80%)	.001**
20. Transfusion-transmitted viral infection is one of the delayed consequences of blood transfusion.	26(52%)	50(100%)	.001**
20. Iron overload is one of the blood transfusion's long-term side effects.	27(54%)	42(84%)	.001**
20. Delayed transfusion reactions are one type of delayed blood transfusion problem.	28(56%)	44(88%)	.001**
21. Glands problems can be brought on by iron overload	20(40%)	41(82%)	.001**
21. Iron overload can damage liver function and induce cardiac diseases.	27(54%)	50(100%)	.001**
22. Short stature can result from iron overload.	25(50%)	46(92%)	.001**
22. Desferal 22 and Deferasirox are two examples of medications that chelate iron. Deferiprone is a medication that chelates iron.	24(48%)	45(90%)	.001**

*P-value<0.05   statistically significant
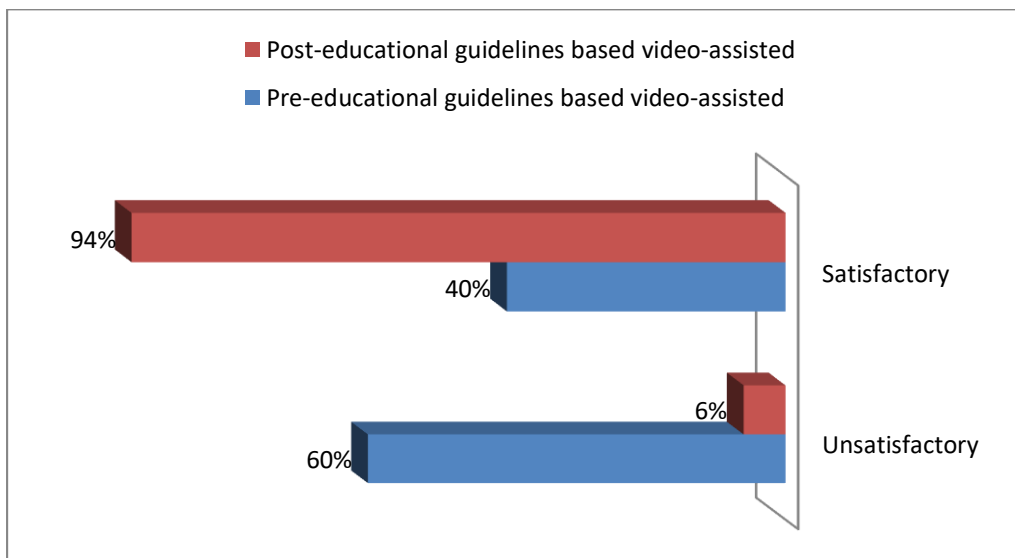
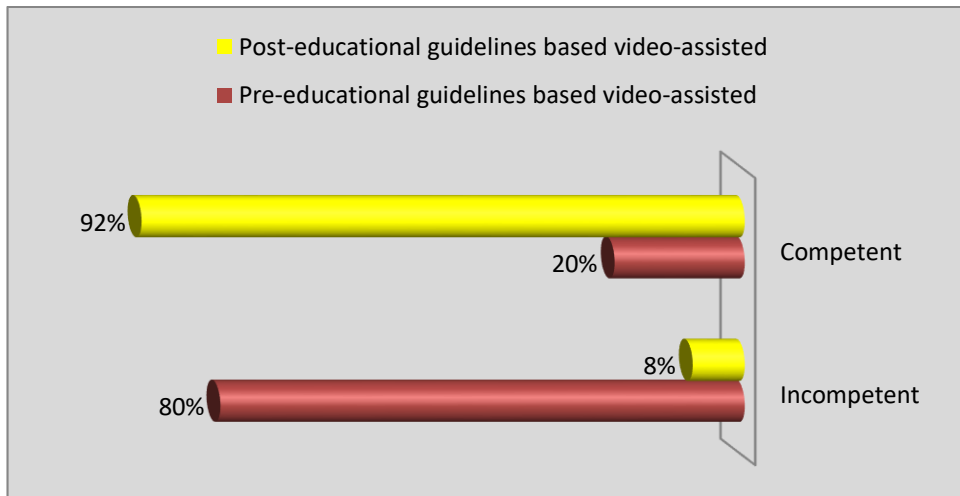X^2= 37.393   P value= P<0.05*   *A statistically significant at P value P<0.05.
Figure 1: Total knowledge level among the studied nurses regarding transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based video-assisted (n=50).

Table 3: Comparison between the mean scores of the nurses' total practice regarding transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based on video-assisted

Items	Pre-educational guidelines based on video-assisted Mean ± SD	Post educational guidelines based on video-assisted Mean ± SD	Paired t-test	p-value
Total Practice	37.88±12.78	63.22±12.87	11.653	.000

P-value<0.05   ** highly statistically significant

X^2= 45.345   P value=0.000****Highly statistically significant at P value <0.001.
Figure 2: Total practice level among the studied nurses regarding transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based video-assisted (n=50).

Table 4: Correlation between nurses' total knowledge and practice scores regarding transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based video-assisted (n=50)

| Items | Total knowledge | | | |
| | Pre-educational guidelines based on video-assisted | | Post educational guidelines based on video-assisted | |
	R	*P*-value	R	*P*-value
Pre total practice	0.287	0.05*		
Post total practice			0.445	0.001*

* P-value <0.05 -------------------- statistically significance

Table 5: Correlation between nurses' knowledge and practices regarding transfusion-dependent β-thalassemia major and blood transfusion pre/post-educational guidelines based video-assisted (n=50).

| Nurses' demographic data | Nurses' knowledge | | Nurses' practice | |
	R	P-value	R	P-value
Age	0.557	0.012*	0.626	0.012*
Academic qualification	0.424	0.001*	0.553	0.013*
Years of experience	0.417	0.013*	0.665	0.014*
Previous training	0.538	0.001*	0.534	0.001*

* P-value <0.05   statistically significance

Discussion

B-thalassemia major is one of the most prevalent genetic diseases that result in severe anemia. Children with significant thalassemia consequently need frequent blood transfusions to survive. When it comes to blood transfusions for kids with -thalassemia, pediatric nurses are essential. As a result, nurses must possess the necessary skills and expertise to ensure and maintain the safety of children (Mariam, 2022). It is becoming increasingly commonplace since video technology has unique qualities that perfectly capture the essence of the nursing phenomena. In addition, video technology is frequently used in nursing as a teaching tool since it provides continuous multi-media, multisensory information about the problem and its context (Balasubramanian et al., 2018). It is very important to help thalassemia nurses become aware of their disease and learn good management because nursing support is required to avoid problems, use procedures, and transfer pediatric patients to the medical staff and genetic counseling.

In the treatment of thalassemia patients, the nurse is essential. Therefore, it is crucial to provide a nursing service that is seamless, integrated, and appropriate for patients in either acute or community settings. Furthermore, nurses are critical in assisting thalassemic patients in becoming aware of their disease and learning effective self-management techniques (Madmoli et al., 2017). So, the researchers carried out this study.

According to the study's findings, more than three-fifths of the nurses under examination were between the ages of 30 and 40 in terms of their demographic information. This conclusion could be explained by the fact that the hospital employs experienced nurses every year and could be connected to the fact that nurses in this age group routinely care for thalassemia patients getting blood transfusions. These results are comparable to those of Kafl and El-Shahat (2020), who examined how an educational program affected nursing care procedures for children with transfusion-dependent thalassemia major and found that more than two-fifths of nurses were 34.45 years old. These results support Elewa and Elkhattan's (2017) evaluation of the impact of a training program on enhancing the standard of nursing care for patients with significant thalassemia. They revealed that more than half of the nurses who underwent testing were in their 30s or 40s.

Regarding the nurses' academic qualifications, it was discovered that more than two-fifths of them held nursing technical degrees, with years of experience ranging from 3 to less than 6 years. This result could be explained by the fact that the community receives a large number of nurses from the technical institute of Nursing. This conclusion is most likely due to the young age of the nurses who were studied. As nurses' years of experience decrease, their performance suffers, especially while caring for children with thalassemia. According to the researchers, young nurses currently have difficulty transitioning into the workforce; as a result, the perceptions and requirements of young nurses must be taken into account to provide successful succession planning. These findings are corroborated by Kafl and El-Shahat (2020), who also presented similar findings.

Additionally, Elewa and Elkhattan (2017) discovered that 75% of them had a nursing degree, which is in line with these findings.

The study's findings showed that the average experience years of more than half of the participating nurses ranged from 6 to 10 years. Elewa and Elkhattan (2017) indicated that the average experience years were fewer than five years of experience. These findings were different from theirs.

The study results revealed that the majority of the nurses did not attend any sessions. It may be related to the lack of nursing staff, which prevents these units from allowing them to attend any training sessions to prevent interruptions in work due to their absenteeism, or it may be related to the fact that the unit lacks nurse training programs (Al-Awamreh & Suliman, 2019). These results were in contrast to those of Elewa and Elkhattan (2017), who claimed that the nurses in their study had never been instructed on thalassemia or blood transfusions.

The study's findings regarding nurses' knowledge of pediatric transfusion-dependent - thalassemia major revealed a highly statistically significant improvement in nurses' knowledge regarding all topics of - thalassemia major and blood transfusion following the educational guidelines-based video-assisted intervention compared to before, with a high statistical significance difference between pre/post phases of the education through a video-assisted intervention. This study, Improving Quality of Nursing Care among School-Aged Children with Thalassemia Major in the Area of Blood Transfusion, was conducted by Abolwafa et al., (2019) and its results were similar to those of this study. Following the implementation of the educational program, they found that all knowledge-related criteria among the nurses tested had significantly improved. Khouri et al. (2018) assert that education can improve nurses' performance as direct care providers. These results might be explained by the nurses' insufficient continued training and education, as well as their ignorance of nursing care standards.

Similar to this, Manju and Prasad's (2019) comparative study of the effectiveness of video-assisted versus lecture and demonstration methods of teaching on bag technique among second-year BSc nursing students in a chosen nursing colleague at Mangalore concluded that the video-assisted teaching module was a more effective approach for nurses' education.

The current study's findings showed that while the majority of the nurses had a satisfactory level of knowledge of a post-educational guidelines-based video-assisted intervention, three-fifths of the study's nurses had an unsatisfactory level of knowledge of pre-video-assisted instruction. This, in the opinion of the researchers, demonstrated the beneficial impact of adopting training guidelines based on video-assisted in enhancing knowledge among the examined nurses.

The study's findings showed a highly significant improvement in high mean scores of the studied nurses' practices (before, during, and after blood transfusion, vital sign measurements, and IV iron chelation therapy) compared to pre-educational guidelines-based video-assisted intervention about pediatric transfusion-dependent - thalassemia major. The lack of training programs that emphasize the value of on-the-job training in enhancing nurses' performance, in

the researchers' opinion, maybe the cause of these findings. These findings are consistent with the research published by Abolwafa et al., (2019) on the Nursing Care Quality among School-Age Children with Thalassemia about Blood Transfusion and Self-Concept. They discovered a statistically significant change in the practices of the examined nurses following the intervention.

In addition, a study by Khalaf et al. (2017) titled "Effect of Training Programme on Nurses' Competent Practises Towards Children Receiving Blood Transfusion" discovered that the study nurses had very low levels of competency in caring for children receiving a blood transfusion before the implementation of the educational program, but that this competency increased after the program was implemented.

According to Hijji et al., (2018), who conducted a study investigating nurses' practice of blood transfusion in the United Arab Emirates," and stated that poor blood transfusion practice among nurses is one of the leading causes of morbidity and mortality among patients who get a blood transfusion. As a result, a blood transfusion policy is required, as well as training and instruction regarding these practical standards through an educational program.

The study's findings showed that the majority of the nurses were practicing at an inadequate level before receiving video-assisted instructional interventions, but that after receiving these interventions, nearly all of them were practicing competently. From the perspective of the researchers, this demonstrated the beneficial impact of adopting instructional guidelines based on video-assisted in enhancing practice among the examined nurses, which resulted in proper treatment for children with -thalassemia major and blood transfusion.

The current study discovered a highly significant positive association between the nurses' overall knowledge and practices before and after the video-assisted educational guidelines-based intervention in pediatric transfusion-dependent major thalassemia. These results concurred with Elewa and Elkhattan's (2017) finding that there was a statistically significant relationship between nurses' knowledge and practice in the pre-and post-educational guidelines-based video-assisted implementation stages. These findings demonstrate how knowledge affects practice and how incorrect or insufficient knowledge will result in more risky and ineffective nursing procedures. According to the researchers, the relationship between the two can be explained by the fact that practice-based development reflects advances in knowledge. Additionally, it indicates that the investigated nurses could practice well when they had adequate knowledge. Additionally, this demonstrated the effectiveness and beneficial results of the video-assisted intervention based on educational principles.

This could be explained by the nurses having more time for blood transfusion instruction, which could help them increase their knowledge and capacity to function effectively, as the researchers sent films to the nurses' e-mails. The fact that educational guidelines-based video-assisted intervention renders professional talents out of date quickly suggests that this discovery can be linked to scientific and technological improvements. A thorough foundational professional education is no longer adequate for nurses to practice. Kaur and Charan (2018) discovered

that the majority of the nurses assessed in the post-test phase had a high level of practice, which supported this finding. Given the ongoing development of training approaches, nursing education should be efficient and up-to-date. This result was consistent with a study by Safwat and Khorais (2018), which found a substantial positive association between nurses' knowledge and practices during the post-program stages.

The results of this study showed a highly statistically significant correlation between the studied nurses' knowledge and practice regarding pediatric transfusion-dependent -thalassemia major post-educational guidelines based on video-assisted intervention and their demographic data (age, educational attainment, years of experience, and prior training). Additionally, Vaghar's (2018) study " titled "The Impact of an Educational Programme on Blood and Blood Products Transfusion on Nurses' Level of Knowledge and Performance" noted that to reduce transfusion errors, training, and education are crucial for all staff nurses involved in the transfusion operation.

Finally, the current study showed that, both before and after educational guidelines based on video-assisted intervention, there was a statistically significant relationship between the total knowledge and practice of the examined nurses and their demographic data, including age, academic qualification, years of experience, and prior training. According to the researchers, it makes sense that nurses with advanced age, strong academic credentials, more years of work, and prior training had a greater depth of knowledge and experience. According to Deborah and Corcoran (2018), there is a correlation between education level and nurses' knowledge and nursing practice, which supports these findings. Cappellini et al.'s (2020) findings concurred with these conclusions. who studied " A phase 3 trial of luspatercept in patients with transfusion-dependent β-thalassemia" and found the same result. Additionally, Shafik and AbdAllah (2018) reported that nurses' knowledge and practices increased with the number of years of experience they had. These findings highlight the relationship between knowledge and practice, showing that without accurate, sufficient knowledge, nursing practices will become more risky and ineffective. Similarly, The study Effect of Educational Guidelines on Nurses' Performance Regarding the Management of Patients Undergoing Bone Marrow Transplantation by Abed El-Hay et al. (2018), found a statistically significant positive correlation between nurses' knowledge and practice and their socio-demographic characteristics, supported these findings.

Conclusion

Based on the results of the current study, The research hypotheses are confirmed by the current study's findings, and educational guidelines based on video-assisted have enhanced nurses' knowledge of and practices in pediatric transfusion-dependent major thalassemia. It can be concluded that post-video-assisted teaching intervention nurses' knowledge and practices regarding pediatric transfusion-dependent -thalassemia major improved statistically significantly compared to pre-intervention, reflecting the efficacy of the educational guidelines based on video-assisted teaching. Additionally, there was a statistically significant association between the nurses' demographic data and

their post-educational guidelines based on video-assisted intervention, total knowledge, and practice.

Recommendations

Based on the results of the current study, the following recommendations can be suggested:
- The study suggested adopting training guidelines based on video-assisted practice to boost nurses' knowledge and ensure competency when caring for children with transfusion-dependent -thalassemia major.
- To increase nursing staff members' understanding and practice of blood transfusion and pediatric B- thalassemia major, periodic training programs should be developed using a variety of instructional techniques.
- To assist nurses in caring for children with transfusion-dependent - thalassemia major, guidelines should be prepared and made available to them in Arabic.
- To generalize the findings, the current study must be repeated with a large sample of nurses in other situations.

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