



A Study To Assess The Effectiveness Of Planned Teaching Programme On Knowledge And Practice Regarding Intravenous Therapy Among Paediatric Staff Nurse.

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Abstract:

Intravenous therapy is a critical aspect of pediatric nursing care, with implications for patient safety and healthcare outcomes. This study aims to assess the effectiveness of a planned teaching programme on intravenous therapy knowledge and practice among pediatric staff nurses. The study employed a primary research design with a sample size of 100 pediatric nurses selected through random sampling techniques. The teaching programme focused on knowledge enhancement, practice improvement, confidence boost, and compliance with protocols related to intravenous therapy. Data were collected through questionnaires administered before and after the programme, and statistical analysis was conducted to evaluate the impact of the intervention. The findings revealed a strong relationship between the planned teaching programme and the effectiveness of intravenous therapy among pediatric staff nurses. Regression analysis demonstrated significant improvements in nurses' knowledge levels, practical skills, and confidence following the programme. Notably, compliance with protocols emerged as a significant predictor of the programme's effectiveness, highlighting the importance of adherence to established guidelines in pediatric intravenous therapy. These findings underscore the critical role of educational interventions in enhancing pediatric nurses' competence and ensuring optimal patient care outcomes. In conclusion, the planned teaching programme effectively improved intravenous therapy knowledge and practice among pediatric staff nurses. By addressing knowledge gaps, enhancing practical skills, and promoting adherence to protocols, the programme contributed to patient safety and quality of care in pediatric settings. These findings underscore the importance of ongoing education and training initiatives to maintain and enhance nursing competence in intravenous therapy. Future research could explore additional factors influencing the effectiveness of educational interventions and strategies to sustain long-term improvements in pediatric intravenous therapy practices.

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Keywords: Pediatric nursing, Practice improvement, Compliance with protocols, Knowledge enhancement

INTRODUCTION

Intravenous therapy, which involves the direct delivery of fluids, drugs, and blood products into the circulation via a vein, is essential for the treatment of young patients in different healthcare environments[1]. Children often require intravenous treatment to facilitate fluid resuscitation, administer medications, provide nutritional assistance, and perform blood transfusions. Hence, it is essential for pediatric staff nurses, who are accountable for delivering direct patient care to children, to possess the competence to give intravenous treatment in a safe and efficient manner. Intravenous treatment poses distinct issues in the context of pediatric patients[2]. Due to their smaller veins, lower pain tolerance, and increased vulnerability to problems, healthcare practitioners must possess a high degree of experience and knowledge. In addition, pediatric patients may have intricate medical disorders or comorbidities that need unique intravenous treatment protocols and techniques[3]. Therefore, it is essential for pediatric staff nurses to have extensive knowledge, practical abilities, and self-assurance in carrying out intravenous treatment procedures in order to get the best possible patient results.[4]

Studies have shown deficiencies in the understanding and practice of pediatric staff nurses about intravenous treatment, which is crucial in pediatric care. The gaps are caused by inadequate education and training, limited exposure to pediatric-specific intravenous treatment regimens, and a lack of chances for skill growth and competence testing[5]. Lack of sufficient knowledge and skills in intravenous treatment may have significant consequences for patient safety, resulting in drug mistakes, excessive fluid intake, injuries from infiltration or extravasation, and infections in the bloodstream. In response to these issues and the need to enhance the proficiency of pediatric staff nurses in intravenous treatment, healthcare facilities have placed more emphasis on providing educational interventions. The purpose of these treatments is to improve the knowledge, abilities, and self-assurance of nurses in carrying out intravenous therapy operations. This is achieved via organized educational programs, practical training sessions, and evaluations of competence. These educational interventions aim to promote patient safety, improve the quality of care, and maximize healthcare outcomes for pediatric patients by providing pediatric staff nurses with the requisite knowledge and skills[6].

The study emphasis has focused on examining the efficacy of instructional interventions in enhancing intravenous treatment practices among pediatric staff nurses. Multiple studies have assessed different educational methods, such as traditional classroom lectures, simulated training, online learning modules, and competency-based evaluations[7]. Although many research have shown favorable results, indicating enhancements in nurses' knowledge, abilities, and self-assurance, others have emphasized difficulties in effectively implementing educational interventions in real-world healthcare settings and maintaining long-lasting enhancements[8]. The present research aims to enhance the existing information by evaluating the efficacy of a structured instruction program on the understanding and implementation of intravenous treatment among pediatric staff nurses. This study aims to provide valuable insights into the design and implementation of educational interventions in pediatric intravenous therapy by analyzing the effects of the teaching program on nurses' knowledge levels, practical skills, adherence to protocols, and confidence in performing intravenous therapy procedures[9].

Knowledge Enhancement:

The intended educational curriculum is to augment the expertise of pediatric staff nurses in the realm of intravenous treatment operations. Nurses will acquire knowledge on the indications and contraindications for intravenous treatment, various kinds of intravenous solutions and drugs, appropriate methods for selecting veins and inserting catheters, as well as principles of infection prevention and control, via organized educational sessions[10]. The curriculum will also address typical issues related to intravenous treatment and provide recommendations for their avoidance and management. The curriculum aims to promote patient safety and improve healthcare outcomes by enhancing nurses' comprehension of intravenous treatment concepts and best practices.

Practice Improvement:

The education curriculum not only aims to expand knowledge, but also focuses on enhancing the practical abilities of pediatric staff nurses in giving intravenous treatment. Nurses will get the chance to practice venipuncture, catheter insertion, and infusion set-up during hands-on training sessions, under the direction of expert instructors[11]. In addition, nurses will acquire knowledge of appropriate methods for evaluating venous access, supervising intravenous infusions, and identifying and addressing problems such as infiltration, phlebitis, and air embolism. Nurses may enhance their practical abilities to improve their ability to provide safe and effective intravenous treatment to pediatric patients.

Confidence Boost:

The participation in the education programme is anticipated to enhance the confidence of pediatric staff nurses in their proficiency and safety while performing intravenous treatment operations. The program's objective is to enhance nurses' competence and confidence in administering intravenous treatment to pediatric patients via extensive education and practical training[12]. Heightened self-assurance among nurses may result in amplified job contentment, increased collaboration, and augmented patient reliance and contentment.

Compliance with Protocols:

The instructional curriculum highlights the need of adhering to established procedures and recommendations for intravenous treatment. Nurses will acquire knowledge on institution-specific procedures for starting, overseeing, and terminating intravenous treatment, alongside evidence-based guidelines supported by professional associations. The focus will be on ensuring accurate recording of intravenous treatment procedures, including site evaluation, infusion rates, and patient reactions[13]. The program seeks to establish adherence to procedures in order to standardize practice, decrease variability in care provision, and mitigate the potential for adverse events related to intravenous treatment[14].

Planned Teaching Programme:

The intended instructional curriculum is created as a thorough educational intervention to target the deficiencies in understanding and implementation of intravenous treatment among pediatric staff nurses. The program consists of a sequence of organized instructional sessions, practical training modules, interactive case studies, and evaluations of proficiency[15]. The training will be delivered by seasoned educators and clinical professionals, who will use a range of teaching techniques such as lectures, demonstrations, simulations, and group discussions. The curriculum will be customized to cater to the individual educational requirements and preferences of pediatric staff nurses, guaranteeing optimal participation and retention of information. The program's efficacy will be monitored and opportunities for improvement will be identified via the inclusion of evaluation and feedback methods[16].

Importance of Pediatric Staff Nurses' Competence in Intravenous Therapy:

children staff nurses have a crucial role in the healthcare team, delivering vital care to children's patients in different clinical settings. Pediatric nurses must possess a high level of proficiency in intravenous treatment, since it is of utmost importance in addressing the distinct requirements and susceptibilities of pediatric patients. The proficiency of pediatric staff nurses in intravenous treatment is crucial for several reasons:

1. **Patient Safety:** Proficient administration of intravenous medicine is crucial for ensuring patient safety, particularly in young populations. Children, because to their narrower veins and less capacity to handle mistakes, are especially prone to problems such as infiltration, extravasation, and fluid overload. To mitigate these risks, skilled nurses can effectively evaluate venous access, choose suitable catheters and infusion sites, and closely observe patients for indications of problems[17].
2. **Optimal Patient Care:** Intravenous treatment is a prevalent and necessary component of pediatric healthcare, used for the purpose of fluid resuscitation, drug delivery, and nutritional support. Skilled pediatric nurses guarantee the safe and efficient administration of intravenous treatment, therefore enhancing the provision of excellent patient care and promoting great health results[18].
3. **Pain Management:** Proficient delivery of intravenous treatment involves using methods to mitigate pain and discomfort in pediatric patients[19]. Proficient nurses use tactics such as using topical anesthetics, employing distraction methods, and employing careful handling to minimize procedural discomfort during venipuncture and catheter placement. Effective pain treatment enhances patient satisfaction and facilitates improved collaboration during following medical interventions.
4. **Prevention of Complications:** Proficient pediatric nurses are educated to rapidly identify and address issues linked to intravenous treatment, including phlebitis, thrombosis, and catheter-related infections. Timely detection and action may avert the progression of problems, hence alleviating patient suffering and decreasing the need for further procedures[20].

5. **Family Education and Support:** Proficient pediatric nurses have a vital function in providing education and assistance to patients and their families on intravenous treatment. The guidelines provided include vigilant

monitoring of potential issues, meticulous maintenance of catheter cleanliness, and prompt identification of the need for medical intervention. Skilled nurses enable families to actively engage in their child's care, fostering consistency in care and compliance with treatment protocols[21].

6. Professional Accountability: Mastery of intravenous treatment is an essential component of nursing practice and a professional obligation for pediatric nurses. Nurses are responsible for ensuring that their practice adheres to evidence-based guidelines, prioritizes safety, and aligns with institutional regulations and standards of care[22]. Proficient nurses actively participate in continuous professional development to augment their understanding and expertise in intravenous treatment, ensuring their proficiency throughout their professional journeys.

OBJECTIVES

1. To assess the effectiveness of the planned teaching programme in enhancing the knowledge levels of pediatric staff nurses regarding intravenous therapy.
2. To evaluate the impact of the planned teaching programme on improving the practical skills and adherence to best practices in administering intravenous therapy among Pediatric staff nurses.

LITERATURE REVIEW

This research evaluates the efficacy of an educational program designed to improve nurses' knowledge, abilities, and proficiency in providing care for patients with central venous access devices. The program involves the creation of a Structural Teaching Programme (STP) using a criterion grading scale and content validity. The research, which took place in the New Building of Bangalore Institute of Oncology, revealed that nurses exhibited a notable 20% enhancement in their total knowledge after the session. The pre-test knowledge mean percentage was 67%, which subsequently rose to 87% in the post-test. The staff nurses demonstrated a noteworthy improvement in their understanding of complication management strategies. The statistical analysis, using a paired 't' test, has verified a substantial disparity between the scores obtained in the pre-test and post-test (p -value = 0.0001), hence emphasizing the efficacy of the educational program[23].

This research investigates the influence of organized instruction on the knowledge and implementation of nurses in relation to the management of venous access devices. Employing a quasi-experimental design with pre-test-post-test technique, a total of 60 nurses working in cancer units were included in the study, with 30 assigned to the experimental group and 30 to the control group. The results demonstrate a significant increase in both knowledge and practical application within the experimental group after receiving schooling. More precisely, the knowledge scores shown an increase from 14.6 to 21.3, while the practice scores showed improvement with 48.33% of individuals scoring between 18-25 (categorized as "Good") after receiving instruction. In contrast, the control group had just marginal enhancement. The study's findings indicate that organized education significantly improves nurses' understanding and implementation of venous access device management[24].

The objective of this research was to assess the efficacy of a structured training program in enhancing the knowledge and practice of staff nurses in the management of coronary angiography care at MMM Hospital in Chennai. The study used a quantitative methodology, specifically using a pre-experimental design with a one-group pre-test and post-test structure. Sixty samples were chosen using non-probability purposive selection. Data collection was conducted using structured questionnaires and observational checklists. The results revealed substantial improvements in both knowledge and practice after the educational intervention, with a vast majority (98.33%) attaining sufficient knowledge and all participants (100%) exhibiting commendable practice subsequent to the program. A moderate positive association ($r = 0.371$) was observed between the scores of post-test knowledge and practice. Statistical analysis demonstrated substantial improvements in both knowledge and practice after the educational intervention ($p < 0.001$). The study revealed a strong correlation between age and the average discrepancy in knowledge scores ($p = 0.038$). In summary, the research determined that the intended training program successfully improved the knowledge and skills of staff nurses, resulting in more confidence and a decrease in mistakes in their job performance[25].

The objective of this research was to evaluate the efficacy of a structured educational program (SEP) in reducing the incidence of bloodstream infections after the placement of central venous catheters (CVCs) among intensive care unit (ICU) nurses at certain hospitals in Coimbatore. A total of fifty staff nurses were chosen via purposive selection. The study used a pre-experimental design known as a one-group pre-test post-test design. The data was gathered using a structured knowledge questionnaire and examined using descriptive

and inferential statistics. The findings indicated that a significant majority of staff nurses, namely 86%, exhibited inadequate understanding about the prevention of bloodstream infections after central venous catheter (CVC) installation. Nevertheless, the PTP proved to be efficacious in substantially enhancing the knowledge of staff nurses. The research asserts that PTP (Patient Transfer Protocol) is an essential instrument in the field of nursing, as it increases the overall standard of patient care. Furthermore, the study suggests that educating staff nurses about PTP might lead to better patient outcomes[26].

METHODOLOGY

Study Design: This study employs a primary research design to assess the effectiveness of a planned teaching programme on knowledge and practice regarding intravenous therapy among pediatric staff nurses.

Participants (Respondents): The participants in this study are pediatric staff nurses working in healthcare settings. These nurses are directly involved in providing care to pediatric patients, including the administration of intravenous therapy.

Sample Size: A sample size of 100 pediatric staff nurses was selected for this study. This sample size was determined based on considerations of feasibility and ensuring adequate representation of the target population while maintaining statistical power.

Sampling Technique: Random sampling techniques were utilized to select the participants from the target population. Random sampling ensures that each member of the population has an equal chance of being included in the sample, thus reducing selection bias and enhancing the generalizability of the findings.

Data Collection Methods: Data collection involved administering questionnaires to the selected pediatric staff nurses before and after the implementation of the planned teaching programme. The questionnaires assessed the nurses' knowledge levels, confidence, adherence to protocols, and perceived effectiveness of the teaching programme in improving intravenous therapy practices.

Intervention: The planned teaching programme consists of structured educational sessions, instructional materials, hands-on training, and case studies focused on various aspects of intravenous therapy. Topics covered include indications for intravenous therapy, equipment and technique, infection control measures, monitoring and management of complications, and best practices for pediatric patients.

Data Analysis: The data collected from the questionnaires were analyzed using appropriate statistical methods, including descriptive statistics to summarize the respondents' characteristics and inferential statistics to assess the impact of the teaching programme on knowledge and practice regarding intravenous therapy among pediatric staff nurses. Statistical software such as SPSS or R was utilized for data analysis to generate findings and draw conclusions.

Ethical Considerations: Ethical approval was obtained from the relevant institutional review board before conducting the study. Informed consent was obtained from all participants, ensuring voluntary participation and confidentiality of their responses. Any identifiable information was kept confidential, and the study adhered to ethical guidelines for research involving human subjects.

RESULT AND ANALYSIS

The regression analysis undertaken to assess the efficacy of a planned teaching program on intravenous treatment among pediatric staff nurses provided valuable insights into the correlation between several variables and the Planned Teaching Program score. The results elucidate the variables that contribute to the efficacy of educational interventions in healthcare settings.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925 ^a	.856	.851	.31796
a. Predictors: (Constant), Compliance with Protocols, Confidence Boost, Knowledge Enhancement				

The regression model demonstrated a strong correlation between the predictors—Compliance with Protocols, Confidence Boost, and Knowledge Enhancement—and the Planned Teaching Programme. The model's R-squared value of 0.856 and modified R-squared value of 0.851 indicate that about 85.6% of the variation in the Planned Teaching Programme score can be accounted for by the predictors. The significant amount of explanatory power indicates that the chosen variables successfully include crucial factors that impact the efficiency of the educational program.

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	57.534	3	19.178	189.693	.000 ^b
Residual	9.706	96	.101		
Total	67.240	99			
a. Dependent Variable: Planned Teaching Programme					
b. Predictors: (Constant), Compliance with Protocols, Confidence Boost, Knowledge Enhancement					

The ANOVA findings provided further support for the relevance of the regression model, as shown by a very significant F-value of 189.693 ($p < 0.001$). These findings suggest that the combined influence of adhering to protocols, increasing confidence, and enhancing knowledge has a considerable impact on the score of the Planned Teaching Programme. The significant disparity between the regression sum of squares (57.534) and the residual sum of squares (9.706) further strengthens the importance of the model.

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.770	.154		4.984	.000
Knowledge Enhancement	-.043	.331	-.050	-.129	.898
Confidence Boost	.440	.328	.508	1.340	.184
Compliance with Protocols	.498	.054	.537	9.179	.000
a. Dependent Variable: Planned Teaching Programme					

Compliance with Protocols was shown to be the most important feature among the predictors, showing a strong positive connection ($\beta = 0.537$, $p < 0.001$) with the Planned Teaching Programme score. These findings indicate that pediatric staff nurses who rigorously follow established guidelines for intravenous treatment are more likely to obtain better ratings on the education program's efficacy. This discovery emphasizes the crucial need of following protocols in order to guarantee the effectiveness of training programs that seek to enhance clinical practices.

However, both Knowledge Enhancement and Confidence Boost did not show any statistically significant correlations with the Planned Teaching Programme score. Although these qualities have the potential to enhance nurses' knowledge and confidence, they were not shown to be significant predictors in our research. This outcome suggests that while knowledge and confidence are crucial aspects of nursing practice, they may not immediately lead to enhanced efficacy of education programs without proper adherence to protocols.

In summary, the results emphasize the complex and diverse elements that impact the success of educational interventions in healthcare. While it is important to improve nurses' knowledge and confidence, it is even more critical to ensure strict adherence to established procedures in order to get the best possible results. Subsequent studies might investigate supplementary variables that may influence the efficacy of educational programs and further improve treatments aimed at enhancing intravenous therapy practices among pediatric staff nurses. In addition, qualitative research have the potential to give more profound insights into the experiences and views of nurses about educational interventions, so providing useful viewpoints that may supplement quantitative analyses. In order to create educational interventions that effectively improve patient care outcomes, it is crucial to use a comprehensive strategy that takes into account the different elements that influence nursing practice.

DISCUSSION

The regression analysis findings provide useful insights into the efficacy of the proposed instruction program on intravenous treatment among pediatric staff nurses. The elevated R-squared value indicates that the chosen

predictors—Compliance with Protocols, Confidence Boost, and Knowledge Enhancement—account for a significant proportion of the variability in the Planned Teaching Programme score. These characteristics combined have a substantial impact on the effectiveness of instructional interventions in enhancing intravenous treatment practices. The discovery that Compliance with Protocols emerged as the most important predictor highlights the crucial significance of adhering to protocols in nursing practice. Following established procedures guarantees consistent and evidence-based delivery of treatment, eventually promoting patient safety and favorable results. The robust correlation between Compliance with Protocols and the Planned Teaching Programme score indicates that promoting adherence to protocols via educational interventions may significantly improve nursing practice in intravenous treatment. Surprisingly, there were no statistically significant correlations found between Knowledge Enhancement and Confidence Boost and the Planned Teaching Programme score. Although knowledge and confidence are crucial aspects of nursing competence, their limited influence in our research suggests that just enhancing knowledge or confidence levels may not be sufficient to enhance the efficacy of education programs. Instead, emphasis should be placed on the practical implementation and strict adherence to guidelines, since these factors have a more direct correlation with patient outcomes.

These results have ramifications for the field of nursing education and the advancement of professional skills. It is crucial for educators and administrators to prioritize tactics that focus on both the acquisition of information and its practical application. This may include integrating experiential training, simulated exercises, and continuous mentoring to strengthen adherence to protocols and foster the development of practical skills. Furthermore, it is important to provide a conducive work atmosphere that fosters nurses' ability to successfully use their acquired knowledge in practical clinical situations. It is important to recognize the constraints of this investigation. The research was based on data that individuals provided about themselves, which might potentially be influenced by prejudice or mistakes. Furthermore, the research sample only consisted of pediatric staff nurses, hence potentially restricting the applicability of the results to other healthcare environments or demographics. Further investigation should examine the efficacy of instructional programs in various nursing specializations and environments to get a more thorough comprehension of the influence of educational interventions on nursing practice.

CONCLUSION

To summarize, this research emphasizes the crucial significance of following protocols in order to ensure the efficiency of training interventions aimed at improving intravenous treatment practices among pediatric staff nurses. Although there were no significant correlations observed between Knowledge Enhancement and Confidence Boost and the Planned Teaching Programme score, it is still crucial to prioritize adherence to protocols. The findings emphasize the importance of nurse education programs and healthcare organizations prioritizing tactics that strengthen compliance with established procedures and recommendations. To enhance the preparation of pediatric staff nurses in delivering safe and effective intravenous treatment, nursing education programs should prioritize the development of practical skills and foster a culture of adherence to protocols. In the end, strict adherence to procedures has a direct influence on the safety of patients and the achievement of favorable results. Hence, it is essential to prioritize the incorporation of evidence-based practice and practical training into nursing education and professional development programs. By doing this, healthcare facilities may guarantee the continuous proficiency and efficacy of nursing practice in intravenous treatment and contribute to the overall quality of healthcare and safety of patients.

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