
Observation on the Application Effect of Safe Vaccination Nursing Intervention in Children's Vaccination

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Abstract: *Objective:* To analyze the impact of implementing safe vaccination care on the effectiveness of children's vaccination. *Methods:* The research subjects were selected from January to December 2024. 80 children who came to our hospital for outpatient vaccination were selected as observation subjects. They were divided into a safety care group and a routine care group, with 40 children in each group using the random number table method. The routine care group adopted routine care methods of vaccination, while the safety care group used the safe vaccination nursing intervention model under the premise of routine care. The two groups of parents were compared on their mastery of vaccination knowledge and the incidence of adverse reactions after vaccination. *Results:* The incidence of adverse reactions during vaccination of children in the safe care group was significantly lower than that in the routine care group, and their parents' satisfaction with care was higher than that in the routine care group ($P < 0.05$). *Conclusion:* Using safe vaccination care in vaccination can improve the safety of vaccination and improve family satisfaction with care, and can be promoted in vaccination work.

Keywords: Safe vaccination; Nursing intervention; Children; Adverse reactions; Application effects

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1. Introduction

As the lowest-cost and most effective way to prevent and control infectious diseases, vaccination is very important for maintaining the healthy growth of children. It is also a core link in the public health service system. As my country's immunization program continues to advance, the coverage of children's vaccination continues to expand, but safety issues during the vaccination process still attract widespread attention from society^[1]. Due to their young age, insufficient cognitive skills, and underdeveloped immune function, children are prone to crying, resisting behavior, and various adverse reactions during vaccination. These situations not only interfere with the smooth progress of vaccination, but may also cause parents anxiety and even cause trust issues. In serious cases, it will affect the public's recognition of vaccination work and hinder the implementation of policies related to immunization programs. At present, most children's vaccination care only involves process-based operations and basic information notifications, lacking targeted safety care intervention methods, and has limited effects on preventing adverse reactions and providing emotional guidance for parents. In recent years, safe vaccination nursing has gradually received attention, which aims to ensure the safety and smooth progress of vaccination through targeted nursing intervention^[2]. Based on this, in order to improve the safety and effectiveness

of children's vaccination, this study established a safe vaccination nursing intervention model, starting from the entire vaccination process to optimizing nursing measures, and exploring the practical application effect of this model in children's vaccination.

2. Materials and methods

2.1. General information

80 vaccinated children admitted to the vaccination clinic of our hospital from January 2024 to December 2024 were selected as the research subjects and divided into two groups using the random number table method. There were 40 children selected in the safe care group, 22 boys and 18 girls, aged 3 months to 6 years (3.25 ± 1.36) years old. Among the 40 cases in the routine care group, there were 21 males and 19 females, aged 3 months to 6 years (3.32 ± 1.42) years old. There were no contraindications to vaccination in the two groups of children, and the basic information of the two groups of children was comparable ($P > 0.05$).

2.2. Method

The routine nursing team performs routine vaccination care. Before vaccination, they briefly explain to parents the types of vaccinations, vaccination goals and related precautions. They also ask about the children's recent physical condition and carry out basic examination items such as body temperature detection. During the vaccination, they assist in fixing the children's body posture and quickly complete the vaccination operation process. After vaccination, they inform the parents of the precautions after vaccination and the time of the next vaccination. After vaccination, they need to stay for half an hour before leaving.

The safety nursing team provides safe vaccination nursing intervention. The specific content is as follows:

- (1) Pre-vaccination safety preparation: Set up a special safety nursing team to coordinate and arrange for nursing staff to participate in special training on vaccination safety knowledge and communication skills. At the same time, the vaccination site environment is organized in advance to ensure that the vaccination room is clean and disinfected in place, items are neatly placed, a dedicated waiting area for children is designated, and some toys and picture books are placed to distract children. Nursing staff take the initiative to communicate with parents and children. They use popular language and animated videos to explain to parents clearly the vaccination procedures, vaccine safety, and key points to prevent adverse reactions. They also say some comforting words based on the children's age characteristics to ease their nervousness. They also carefully inquire about the children's previous health conditions, allergic history and other information, and carefully check the vaccine information to be vaccinated to avoid mistakes.
- (2) Safe care during vaccination: Choose the appropriate vaccination posture according to the child's age and personality. Parents should hold infants and young children in a fixed position, and encourage preschool children to guide them to actively cooperate with vaccination. The vaccination process should be performed strictly in accordance with sterile requirements, and the movements should be gentle and accurate. Always pay attention to the child's emotional and physical condition during the operation. If the child cries violently, stop the operation to comfort him. After vaccination, press the vaccination site regularly, tell parents the correct pressing method and time, and remind them not to rub.
- (3) Safe management and care after vaccination: Set up a special observation and monitoring area, arrange for a dedicated person to be responsible for monitoring the child's health during the observation period, check every 10 minutes, pay close attention to whether the child has fever, rash and other adverse reactions, and record in detail the time, severity and treatment of the child. If a child has a minor adverse reaction, parents should be informed of the treatment in a timely manner and provide targeted care. For example, if the child has a fever, parents should be instructed to do physical cooling. After the observation, the child's information will be checked again, parents

will be informed of precautions and emergency treatment methods for adverse reactions after returning home, and the contact information of the nursing staff will be left for parents to consult later.

- (4) Extended care service: Make follow-up calls within 24 hours after vaccination to check on the child's condition, inquire about any late adverse reactions, answer parents' questions and provide nursing guidance. Children with adverse reactions will be followed up until the symptoms completely disappear. At the same time, the follow-up information will be entered into the file to facilitate follow-up inquiries.

2.3. Observation indicators

- (1) Compare the occurrence of adverse reactions in two groups of children after vaccination. Adverse reactions include fever (body temperature ≥ 37.3 °C), redness, swelling and induration at the vaccination site, and rash.
- (2) To compare the two groups of parents' satisfaction with vaccination work, use a self-made parent vaccination satisfaction scale to evaluate, with a total score of 0 to 100 points; a score of 80 and above is defined as satisfied, a score of 60 to 79 is defined as basically satisfied, and a score below 60 is defined as dissatisfied.

2.4. Statistical methods

Data were analyzed using SPSS 26.0. The simplified forms of measurement and counting are mean \pm standard deviation (SD) and (n/%), respectively, and through the t and χ^2 test, $P < 0.05$ indicates statistical significance.

3. Results

3.1. Occurrence of adverse reactions to vaccination

The incidence of adverse reactions in the safe nursing group was lower, and the difference was significantly higher than that in the routine nursing group ($P < 0.05$). See **Table 1** for details.

Table 1. Comparison of incidence rates of adverse reactions [n (%)]

Group	Fever	Redness, swelling and hardness at the vaccination site	Rash	Overall incidence
Routine care group ($n = 40$)	5 (12.50)	4 (10.00)	3 (7.50)	12 (30.00)
Safety care group ($n = 40$)	1 (2.50)	1 (2.50)	0 (0.00)	2 (5.00)
χ^2				8.658
P				0.003

3.2. Comparison of vaccination satisfaction among children and their families

The safety nursing group was more satisfied than the routine nursing group ($P < 0.05$), see **Table 2** for details.

Table 2. Comparison of nursing satisfaction [n (%)]

Group	Satisfied	Basically satisfied	Not satisfied	Satisfaction
Routine care group ($n = 40$)	18 (45.00)	14 (35.00)	8 (20.00)	32 (80.00)
Safety care group ($n = 40$)	30 (75.00)	9 (22.50)	1 (2.50)	39 (97.50)
χ^2				4.507
P				0.034

4. Discussions

The safety of children's vaccinations is directly related to children's health status and parents' trust. Perfect nursing intervention measures are an important support for ensuring the safety of vaccinations, and are also a core condition for improving the quality of public health services. The routine vaccination care model focuses on the execution of process operations and does not pay enough attention to children's psychological comfort and parents' cognitive intervention, making it difficult to meet the safe care needs of children's vaccination^[3]. The safe vaccination nursing intervention model takes full safety assurance as the core, and comprehensively improves the quality of vaccination care through the full chain of pre-vaccination preparation, intervention during vaccination, post-vaccination care and extended care^[4]. The results of this study show that the incidence of adverse reactions to vaccination among children in the safe care group is much lower than that in the routine care group, and parents' satisfaction with vaccination services is significantly higher. This shows that this nursing intervention model has significant application value and can effectively make up for many deficiencies in routine care.

At the same time, the nursing staff does not simply ask about the health situation, but carefully checks the children's past health history, allergy history and other information, and also rigorously checks the core content such as vaccine name and vaccination dose, accurately screens out children who are not suitable for vaccination, and avoids serious adverse reactions caused by individual differences or information deviation from the source^[5]. During the vaccination implementation stage, positions are selected individually based on children's age and personality traits. Infants and young children adopt a hugging position to enhance their sense of security, while preschool children increase their willingness to cooperate through motivational communication. This personalized intervention can reduce the damage to the vaccination site caused by children's resistance and struggle, and reduce the probability of local redness, swelling, and induration. Nursing staff strictly follow the aseptic technical specifications and move gently and accurately to further reduce the stimulation of local tissues during the vaccination operation and avoid adverse reactions induced by mechanical damage. After vaccination, setting up the observation and monitoring area and the implementation of the dedicated inspection system can achieve early detection and early treatment of adverse reactions. Inspections every 10 minutes can promptly detect early reactions such as fever and rash. Targeted use of physical cooling, local cold compress, and other nursing measures can quickly relieve symptoms and avoid aggravation of adverse reactions. After the observation, information verification, precautions, and contact information retention can provide professional guidance for parents' follow-up care and reduce adverse reactions caused by improper care. In addition, follow-up calls are made within 24 hours after vaccination to understand the condition of children, inquire about the occurrence of delayed adverse reactions, answer parents' questions, provide nursing guidance, follow up with children with adverse reactions until the symptoms completely disappear, and enter the follow-up information into files for subsequent retroactive inquiries. This measure fills the gap in extended services in routine care and can promptly detect and deal with adverse reactions that do not appear in the short term after vaccination, thereby further reducing the overall incidence of adverse reactions.

In terms of satisfaction with vaccination services, the safe vaccination nursing intervention accurately meets the core needs of parents and relies on professional services while also providing humanistic care. Therefore, parent satisfaction is significantly higher than that of the conventional care group^[6]. Parents' main needs for children's vaccination are safety and information, and the intervention measures of the safety care group exactly cover these two aspects. To meet the needs of information understanding, the routine care group simply informs parents of basic information such as vaccine type and purpose of vaccination, while the safety care group uses popular language combined with intuitive methods such as animated images to explain the vaccination process, vaccine safety, adverse reaction prevention points and emergency response methods to parents in detail. Diversified communication methods enable parents to have a clearer and more comprehensive understanding of relevant knowledge and reduce anxiety caused by unclear information^[7,8]. A series of standardized and refined measures, including careful checks before vaccination, standardized operations during vaccination, dedicated care after vaccination, and follow-up tracking, have made parents feel that the nursing staff attaches great importance to the safety of their children. Inspections every 10 minutes after vaccination, timely treatment

of adverse reactions, and 24-hour follow-up services have eliminated parents' worries about problems occurring after vaccination and will greatly improve parents' sense of security. In terms of emotional counseling, nursing staff not only care about children's emotions, but also use soothing language and distraction methods to reduce children's nervousness and resistance. They actively communicate with parents, listen to parents' concerns and patiently answer questions, so that parents' anxiety can be released. The nursing staff's enthusiastic service attitude, standardized operating procedures, and timely problem-solving abilities also provide parents with a good nursing experience. When a child cries violently, the nursing staff will immediately stop the operation and provide comfort instead of forcing the vaccination to be completed. The humanistic care makes the parents feel respected. The nursing staff can give professional and detailed answers to various questions raised by the parents, avoiding perfunctory responses.

5. Conclusion

In general, safe vaccination nursing intervention relies on safety measures in all aspects of the vaccination process, effectively reducing the incidence of adverse reactions to vaccination in children, and relying on high-quality communication services to improve parents' satisfaction with vaccination services.

Disclosure statement

The author declares no conflict of interest.

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