Innovative Approaches in Health Science Journal

ORIGINAL
Published Online: February 17, 2025
https://doi.org/10.1234/fr90dm98

Nursing care for children with dengue hemorrhagic fever in fulfilling the needs of fluid and electrolytes at hative passo hospital : a case study

Felisya Bonara[a,b] | **Harianti Fajar**[a]

[a]Nursing Science Study Program, Pasapua Health College, Ambon, Indoneisia
[b]Hative Passo Hospital, Ambon, Indonesia

Abstract

Background: Dengue Hemorrhagic Fever (DHF) is a viral infectious disease transmitted through the bite of the Aedes aegypti mosquito and often attacks children. DHF can cause serious complications, such as dengue shock and bleeding, which require prompt treatment in hospital. **Method:** This study aims to provide nursing care for children with DHF, especially in meeting fluid and electrolyte needs. This case study uses a descriptive method with an interview approach, observation, physical examination, and nursing process. The study was conducted on one pediatric patient with one diagnosis at Hative Ambon Hospital for three days, namely on April 5-7, 2024. **Results:** The results of the case study showed that the priority diagnosis in the child was fluid volume deficiency related to lack of fluid intake, characterized by complaints of nausea, vomiting twice at home, headache, nosebleed once, red spots on the right hand, and low fluid intake while in the hospital. In addition, the patient looked weak, had dry lip mucosa, and had a fever with a temperature of 38.9°C. **Conclusion:** Providing fluids to children with DHF is an effective method to prevent dehydration and reduce the risk of further complications. Therefore, close monitoring of fluid and electrolyte balance is essential in nursing care of DHF patients.

Keywords: Dengue Hemorrhagic Fever, Nursing Care, Fluids and Electrolytes, Children

1. Introduction

Dengue Hemorrhagic Fever (DHF) is a viral infectious disease transmitted through the bite of the Aedes aegypti mosquito and is a public health problem in various tropical and subtropical countries, including Indonesia (World Health Organization [WHO], 2020). This disease often attacks children and can cause serious complications such as dengue shock and bleeding, which have the potential to increase morbidity and mortality if not treated quickly and appropriately (Bhatt et al., 2013).

Fulfillment of fluid and electrolyte needs is an important aspect in nursing care for pediatric patients with DHF. Fluid balance disorders that occur due to increased capillary permeability can cause hypovolemia, shock, and even death if adequate rehydration therapy is not immediately received (de Castro et al., 2016). WHO guidelines (2021) emphasize the importance of close monitoring of fluid balance and administering intravenous fluids appropriately according to the patient's clinical condition to prevent further complications.

In nursing practice, a comprehensive approach that includes assessment, planning, implementation, and evaluation of fluid needs is essential to ensure that patients receive optimal therapy. This case study aims to explore the nursing care provided to pediatric patients with DHF in meeting fluid and electrolyte needs at Hative Passo Hospital. By understanding more deeply the nursing process carried out, it is hoped that the results of this study can be a reference in improving the quality of care for children with DHF.

2. Materials and Methods

This study uses a descriptive method in the form of a case study with a comprehensive nursing process approach, which includes assessment, nursing diagnosis, planning, implementation, and evaluation (Notoatmodjo, 2018). This case study aims to explore nursing care for school-age children suffering from DHF with impaired fulfillment of fluid and electrolyte needs, especially in mild to moderate dehydration conditions. The subject in this study was one child diagnosed with DHF who was undergoing treatment at Hative Passo Hospital. Inclusion criteria included school-age children with DHF who experienced fluid

Received: 24 November, 2024 | Accepted: February 08, 2025

and electrolyte imbalance and patients who were treated during the study period, while exclusion criteria included children with DHF who experienced severe complications such as dengue shock or multi-organ disorders.

The instruments used included stationery and books for recording data, interview sheets to obtain information from parents and health workers, cameras for documentation (with attention to ethical and privacy aspects), and nursing care formats that included subjective and objective patient data, intervention plans, and evaluation of nursing actions provided (Potter & Perry, 2020). Data collection was conducted through interviews with the patient's parents and health workers to obtain the patient's medical history and condition development, direct observation of vital signs and hydration status, physical examination to assess signs of dehydration such as skin turgor and mucosal conditions, and documentation of the nursing process to record each stage of the intervention given.

This study was conducted for three days, from April 5 to 7, 2024, at Hative Passo Hospital. The data collected were analyzed descriptively to obtain an in-depth picture of the effectiveness of nursing care in meeting fluid and electrolyte needs in pediatric patients with DHF.

3. Results

This case study was conducted on April 5-7, 2024 at the Hative Ambon Hospital. This case study uses 5 stages of the nursing care process starting from assessment, nursing diagnosis, nursing planning, nursing implementation and nursing evaluation.

3.1 Assessment

In the data obtained, a patient named An.K, 5 years old, male, was admitted on April 3, 2024 at 09.00 WIT and an assessment was carried out on April 5, 2024, the patient was admitted with a diagnosis of grade II dhf, the complaints obtained were fever and vomiting, the patient's mother said that her child was taken to the hospital because the fever had been going up and down for 2 days, abdominal pain, nausea and vomiting and the client's mother said that her child had a headache and had a nosebleed 1x. Bb when assessed 20 kg before being sick 21 kg Tb 105cm, the temperature was assessed 38.9C. when sick, the patient's appetite decreases, the portion of food is not finished, the patient does not drink enough, the patient looks weak, the mucous membranes and lips are dry, the skin turgor decreases, there is tenderness in the abdomen, the skin is reddish, there are red spots on the client's right hand, the skin feels warm

The therapy given to clients with DHF is RL 20 tpm, pct 100 mg, ranitidine 2x 25 mg, psidii syrup 3x 1 cth. from the results of the assessment, it was found that the client's mother said that her child had a fever for 2 days, nausea and vomiting 2 times, headaches and nosebleeds 1 time at home, there were red spots on the right hand, her child was lazy to drink and the child looked weak, reddish skin, skin felt warm, temperature 38.9 c, dry mucous membranes, there were red spots on the right hand, the child seemed to be holding back pain in the abdomen

3.2 Diagnosis

The diagnosis she took on the child was a lack of fluid volume related to lack of fluid intake

3.3 Nursing intervention

After nursing actions were carried out 3x 7 hours, it is expected that the fluid volume will increase with the following criteria: 1) moist mucous membranes, 2) vital signs within normal limits, 3) increased fluid intake, 4) decreased dehydration. The interventions obtained were 1) observation of vital signs, 2) checking signs and symptoms of hypovolemia, 3) monitoring fluid intake and output, 4) monitoring urine color, 5) providing fluid intake, 6) recommending increased oral fluid intake, 7) recommending increased drinking, 8) collaboration in administering intravenous fluids

Table 1 supporting examinations on clients with a diagnosis of DFh in meeting fluid and electrolyte needs

No	Supporting investigation	Result	Information
1	Laboratory	05/05/22 Leukosit : 2.200/mm3 Hemoglobin: 5,8 g/dl	Normal Leukosit (4.0- 10.0x 103/µ) Hemoglobin 12-16 g/dl
2		06/02/22 Leukosit : 6.900/mm3 Hemoglobin : 9,6 g/dl	
3		07/04/22 Leukosit : 12.000/mm3 Hemoglobin : 7,1 g/dl	

3.4 Implementation of nursing

Based on the results of the implementation obtained, namely on April 5, at 08.22 WIT, vital signs were measured and the results obtained were a temperature of 38.9 ° C, RR 24x / minute, pulse 120 / minute, at 08.30 WIT, an examination of signs and symptoms of hypovolemia was carried out and the results obtained were dry mucous membranes, there were red spots > 20 on An.K's hands and An.K looked weak, at 08.38 WIT, an action was taken to monitor fluid input and output and the results obtained were that the client's mother said that her child had urinated 2 times in the morning, The patient drinks 4-5 glasses of water/day, drinks ½ glass of milk, at 08.42 WIT, an action was taken to monitor the color of urine and the results were dark yellow, at 08.44 WIT, an action was taken to provide oral fluid intake, the results were that An.K had been given oral fluid intake in the form of milk, at 08.46 WIT, it was recommended to drink more and the results were that the client's mother listened to the advice given well, at 09.15 WIT, a collaborative action was taken to provide intravenous fluid therapy and the results were that the client An.K had IVFD RL 20 tpm installed, had been given Pct drips 100mg, Psidii syp, Inj. Ranitidine 25 mg. And the results of the implementation obtained on April 6, namely at 08.25 WIT, vital signs were measured and the results were 37°C, Pulse 84x/minute, RR 24x/minute, at 08.30 WIT, an examination of hypovolemic signs and symptoms was carried out and the results were moist mucous membranes, red spots on An.K's hands began to decrease, at 08.33 WIT, an action was taken to monitor fluid intake and output and the results were Mrs. J said that the client had urinated 1 time in the morning, the patient drank 4-5 glasses of water/day and 1 glass of warm milk in the morning, at 08.35 WIT, an action was taken to monitor urine color and the results were yellow urine, at 08.37 WIT, an action was taken to provide oral fluid intake, the results were An.K had been given oral fluid intake in the form of milk, at 08.39 WIT, an action was taken to recommend drinking more and The results obtained Mrs. J listened to the advice given well, at 09.13 WIT collaborative action was carried out to provide intravenous fluid therapy and the results obtained An.K installed IVFD RL 20 tpm, Psidii syr 1x (p) after meals, Inj. Ranitidine 1x25 mg

3.5 Nursing evaluation

Based on table 8 on day 1, the results obtained An.K looked weak, temperature 37.3°C, RR 24x/minute, Pulse 84x/minute, there were still red spots> 20 on the hands, dry lip mucosa, dark yellow/dark yellow urine color. The results on day 1 showed that the fluid volume was still decreasing. On day 2, the results showed that the body temperature decreased to 36.8°C, RR 22x/minute, Pulse 84x/minute, moist lip mucosa, red spots on the hands began to decrease, and the urine color was yellow. The results on the evaluation on day 2 showed that the fluid volume began to increase. On day 3, the results obtained were that the child had started to drink a lot, the lip mucosa was moist, the red spots on the child had decreased, temperature 36.9°C, RR 24x/minute, Pulse 82x/minute, pale yellow urine color, the results on day 3 showed that the urine volume began to increase.

4. Discussion

4. 1. Assessment in Nursing Care for DHF Patients

Assessment is the initial stage in the nursing process that aims to collect subjective and objective data to determine patient needs (Potter & Perry, 2020). In this case study, patient An.K, a five-year-old boy, experienced grade II dengue hemorrhagic fever (DHF). Clinical manifestations found included high fever, vomiting, abdominal pain, nosebleeds, red spots on the hands, and signs of dehydration such as dry mucous membranes and decreased skin turgor.

Dehydration is a common complication in DHF patients due to increased capillary permeability which causes plasma leakage and hypovolemia (World Health Organization, 2021). In this case, the patient's weight loss from 21 kg to 20 kg, as well as vital signs showing an increase in body temperature to 38.9°C, are important indicators of significant fluid deficit.

4.2. Nursing Diagnosis: Deficient Fluid Volume

Based on the assessment results, the nursing diagnosis taken is "Deficient fluid volume related to insufficient fluid intake." This diagnosis is in accordance with the NANDA International criteria (2021), which defines deficient fluid volume as a condition in which an individual experiences excessive loss of body fluids or insufficient fluid intake. This is reinforced by signs of dehydration, including decreased skin elasticity, decreased oral fluid intake, and changes in urine color to dark yellow.

4.3. Nursing Interventions

The nursing interventions provided aim to restore the patient's body fluid balance with the expected outcome criteria, such as moist mucosa, vital signs within normal limits, increased fluid intake, and decreased signs of dehydration (Smeltzer, Bare, Hinkle, & Cheever, 2020). Some of the interventions carried out include:

a. Regular observation of vital signs to assess the development of the patient's condition.
b. Examination of signs and symptoms of hypovolemia to detect complications early.
c. Monitoring fluid intake and output to measure fluid balance.
d. Monitoring urine color as an indicator of body hydration.
e. Provision of oral fluid intake to increase hydration.
f. Recommendation to the patient's family to increase the child's fluid intake.

g. Collaboration in administering intravenous fluids as the primary therapy in treating severe fluid deficits.

4.4. Nursing Implementation and Results Obtained

Implementation was carried out in stages over three days of treatment with daily evaluation. On the first day, the patient still experienced signs of severe dehydration, such as dry lip mucosa and red spots that were still visible in more than 20 spots on the hands. However, after being given intravenous fluid therapy RL 20 tpm, as well as recommendations to increase oral fluid consumption, the patient's condition began to show improvement.

On the second day, the patient's vital signs began to stabilize with a decrease in body temperature to 37°C, the lip mucosa began to moisten, and the frequency of urination increased. The color of the urine which was previously dark yellow began to change to brighter, indicating an improvement in hydration.

On the third day, the patient's condition improved with body temperature within normal limits (36.9°C), red spots began to decrease, and urine color became pale yellow. Moist lip mucosa and increased oral fluid consumption are indicators of the success of nursing interventions in overcoming fluid deficits in DHF patients.

4.5. Nursing Evaluation

Evaluation is the final stage in the nursing process which aims to assess the effectiveness of the interventions that have been carried out. Based on the evaluation results, the patient showed significant improvement in condition from the first to the third day of treatment. The main indicators that indicate the success of therapy are increased urine volume, improved mucosal conditions, and stabilization of vital signs.

This study is in line with research conducted by Ranjit & Kissoon (2019), which states that providing adequate fluid therapy is the main step in treating DHF patients with dehydration complications. The results of this study also support the WHO recommendation (2021) which emphasizes the importance of strict fluid monitoring in DHF patients to prevent complications such as dengue shock.

5. Conclusions

Based on the results of this case study, it can be concluded that adequate fluid therapy, either orally or intravenously, is the main intervention in dealing with fluid deficit in DHF patients. The implementation of systematic nursing care, from assessment to evaluation, has proven effective in improving patient hydration status and preventing further complications. Therefore, nurses have a very important role in closely monitoring the patient's fluid balance to ensure optimal recovery.

Conflict of Interest

There is no conflict of interest

References

Bhatt, S., Gething, P. W., Brady, O. J., Messina, J. P., Farlow, A. W., Moyes, C. L., ... & Hay, S. I. (2013). The global distribution and burden of dengue. *Nature, 496*(7446), 504-507. https://doi.org/10.1038/nature12060

de Castro, W. G., Siqueira, M. M., Pires, R. E., & de Andrade, S. M. (2016). Clinical and laboratory profile of patients with dengue fever. *Revista do Instituto de Medicina Tropical de São Paulo, 58*, 77. https://doi.org/10.1590/S1678-9946201658077

Direktorat Pencegahan dan Pengendalian Penyakit Tular Vektor dan Zoonotik. (2021). *Pedoman pencegahan dan pengendalian DBD di Indonesia*. Kementerian Kesehatan.

Harapan, H., Michie, A., Sasmono, R. T., & Imrie, A. (2019). Dengue: A review of epidemiology, pathogenesis, diagnosis, and control. *Acta Tropica, 190*, 1-13. https://doi.org/10.1016/j.actatropica.2019.03.013

Kementerian Kesehatan Republik Indonesia. (2021). *Situasi demam berdarah dengue di Indonesia tahun 2021*. Kementerian Kesehatan RI.

NANDA International. (2021). *NANDA International nursing diagnoses: Definitions and classification 2021-2023*. Wiley-Blackwell.

Notoatmodjo, S. (2018). *Metodologi penelitian kesehatan*. Rineka Cipta.

Potter, P. A., & Perry, A. G. (2020). *Fundamentals of nursing*. Elsevier.

Ranjit, S., & Kissoon, N. (2019). Dengue hemorrhagic fever and shock syndromes: Challenges and advances in management. *Indian Journal of Critical Care Medicine, 23*(5), 206-213. https://doi.org/10.5005/jp-journals-10071-23199

Setiawan, E., & Prasetyo, W. (2021). Analisis tren kasus demam berdarah dengue di Indonesia tahun 2019-2021. *Jurnal Kesehatan Masyarakat, 15*(1), 45-57.

Smeltzer, S. C., Bare, B. G., Hinkle, J. L., & Cheever, K. H. (2020). *Brunner & Suddarth's textbook of medical-surgical nursing*. Wolters Kluwer.

Widjaja, S., & Suroso, T. (2020). Faktor risiko dan pencegahan DBD pada anak. *Jurnal Epidemiologi Kesehatan Indonesia, 4*(2), 85-95.

World Health Organization (WHO). (2020). *Dengue and severe dengue*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue
World Health Organization (WHO). (2021). *Dengue: Guidelines for diagnosis, treatment, prevention and control*. WHO Press.
World Health Organization (WHO). (2021). *Guidelines for clinical management of dengue fever*. WHO.